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ARTIFICIAL LIGHT TREATMENT AT TUBERCULOSIS DISPENSARIES FOR NON-PULMONARY TUBERCULOSIS.

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In the treatment of patients suffering from non-pulmonary tuberculosis under the schemes of county councils and county borough councils there are, among others, two considerations to be faced: first, that the available accommodation in special and general hospitals is, throughout the country, inadequate for all the cases requiring treatment; and second, that institutional treatment is the most expensive part of tuberculosis schemes. If, therefore, means can be found to give satisfactory treatment to some of the patients at local centres, which they are able to attend regularly with only partial or no interference with their work, then economy may be effected in cost, and the available hospital beds used to better advantage in that they now need take those patients whose treatment can only properly be carried out at institutions.

Early in 1925 the Lancashire County Council authorized its tuberculosis medical staff to undertake an experiment to ascertain whether certain forms of non-pulmonary tuberculosis could be efficiently treated at light centres established in the existing tuberculosis dispensaries in the Administrative County, and staffed by the dispensary officers and nurses. The county is divided into five large dispensary areas with an average population of 340,000, each area containing one chief dispensary and several branch dispensaries. The medical and nursing staff for each of these areas consists of one consultant tuberculosis officer, two assistant tuberculosis officers, and four to seven tuberculosis health visitors.

Two of the consultant tuberculosis officers (Dr. A. D. Brunwin and

Dr. J. L. Stewart) were granted leave of absence in order to study the technique at general light clinics, more especially at the Lord Mayor Treloar Hospital, Alton, at the London Hospital, and at the National Institute for Medical Research, Hampstead. Later, in 1925, lamp equipment was installed in the Ashton-under-Lyne Dispensary (Dr. Stewart) and in the Lancaster Dispensary (Dr. Brunwin); also in 1926 in the Chorley Dispensary, under Dr. Brunwin assisted by Dr. G. H. Leigh. The following types of lamps were tried during the experiment:

At Ashton-under-Lyne.—Westminster Eidinow long-flame carbon arc, 30 ampères; mercury vapour, atmospheric type (K.B.B.), 3 ampères; Jesionek mercury vapour, 4 to 5 ampères; Kromayer water-cooled quartz, 5 ampères.

At Lancaster.—"Alpine Sun" carbon arc, with four electrodes, 15 to 18 ampères; mercury vapour, atmospheric type (K.B.B.), 3 ampères; Hanovia "Alpine Sun" mercury vapour quartz (vacuum), 3 to 4 ampères; tungsten arc, 5 ampères.

At Chorley.—"Alpine Sun" carbon arc, with four electrodes, 22 ampères.

The equipment at each dispensary was not the same, because it was thought desirable to test different lamps, and, further, variations in the public supply of electricity rendered such a course necessary. We wished to obtain actual experience of the following: (1) the number of county cases and the type of case most likely to benefit by the treatment; (2) the staff necessary; (3) the number of hours per day during which treatment could be given; (4) the frequency of attendance by patients; and (5) the accessibility of, and the accommodation at, the

TABLE I.

Lesion.	Light Centre.	Number of Cases Treated.	Treatment Concluded: Quiescent and Apparently Cured.[1]	Still under Treatment at End of 1927.[2]
(i.) Lupus	Ashton-under-Lyne	70	44	26
(ii.) Adenitis with softening and skin involvement	Ashton-under-Lyne	55	44	11
	Lancaster	7	6	1
	Chorley	19	10	9
	Total	81	60	21

[1] The term "quiescent and apparently cured" has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis register as "cured" until three years have elapsed without any signs or symptoms of active disease.

[2] The period of treatment has varied from one month to twenty-eight months.

dispensaries (particularly the size of rooms, the ventilation, and the supply of electric current). At the three experimental centres up to the end of 1927—some two and a half years' experience—a number of interesting and important results and conclusions have emerged, which are dealt with briefly below.

Artificial light has a specific effect in the treatment of superficial forms of tuberculosis—namely, (*a*) lupus vulgaris and scrofulo-derma; and (*b*) tuberculous adenitis, with softening and with or without associated skin infiltration. The table opposite shows that the satisfactory results for group (*a*) have been achieved at the Ashton-under-Lyne

TABLE II.

Form of Tuberculosis or Part of Body Affected.	Number of Cases.	Condition of Patients whose Treatment was Concluded.				Still under Treatment at End of 1927.
		Quiescent and Apparently Cured.	Improved.	Station-ary.	Worse.	
(*a*) *Ashton-under-Lyne*:						
Adenitis without softening	36	33	—	—	—	3
Joints	16	11	—	—	—	5
Abdomen	7	5	—	—	—	2
Sinuses from bone and joint disease	16	10	—	—	—	6
Lungs, sputum positive	2	—	—	—	—	2
Other lesions[1] ...	26	8	—	—	—	18
Total	103	67	—	—	—	36
(*b*) *Lancaster*:						
Adenitis without softening	6	5	—	1	—	—
Lungs, sputum positive	3	—	—	3	—	—
Other lesions[2] ...	32	22	—	—	1	9
Total	41	27	—	4	1	9
(*c*) *Chorley*:						
Adenitis without softening	15	8	—	—	—	7
Other lesions[3] ...	31	9	1	—	—	21
Total	46	17	1	—	—	28

[1] Includes tuberculous empyema, bronchial glands (diagnosed on symptoms and skiagrams), adenitis and lungs, and kidney.

[2] Includes tuberculosis of bones and joints, testicle, and bronchial glands (diagnosed on symptoms and skiagrams).

[3] Includes tuberculosis of bones and joints, abdomen, cervical glands, ulcer of tongue, kidney, abscess of chest wall, testicle; several of the cases were complicated by pulmonary tuberculosis or lupus.

centre (there being no suitable lamp equipment for local treatment at Lancaster and Chorley), and for group (*b*) at Ashton-under-Lyne, Lancaster, and Chorley.

In appraising these results it must not be forgotten that many of the lupus cases had been under treatment for so long as twenty, thirty, and forty years before commencing light treatment.

For other forms of tuberculosis see Table II., p. 5.

For the kind of lesion treated in Table II. the results are quite satisfactory, but the evidence is not conclusive that light exercises a specific effect on the deeper non-pulmonary lesions.

So far as improvement in general condition, as evidenced by gain in weight, is concerned, patients vary very widely in their response to light treatment; and although a patient may fail to improve in general condition to any marked extent, it does not follow that the tuberculous lesion will not improve. Marked gain in weight has been a feature in some of the arrested cases, but many gained little in weight or remained stationary.

Pigmentation has, on the whole, been associated with improvement in general condition, and the non-pigmenters have not improved to quite the same extent. But there has been no direct relationship between successful treatment of tuberculous lesions and the degree of pigmentation acquired.

No general rule can be laid down as to how particular persons will react to the light as the response to the treatment varies within very wide limits. It cannot be too strongly emphasized that each patient must receive individual treatment and attention so far as initial exposure and graduation of exposure is concerned. Wherever possible a test exposure should be made before beginning treatment in order to ascertain the sensitivity of the skin.

General irradiation is the most important part of the treatment, and local treatment, where used, is subsidiary. General irradiation should, therefore, always be given unless there are special reasons why this course is inadvisable.

The attendance of patients, usually twice or thrice per week, at the light sessions has been satisfactory. *About three-fourths of the patients have been able to follow their normal occupation during treatment.*

The average duration of light treatment at the three dispensaries for those cases completing treatment in 1927 and becoming apparently cured was 7·5 months. Prior to commencing light treatment their average period of treatment by other methods was sixty-three months.

It has been demonstrated that the presence of a pulmonary lesion in a combined case of pulmonary and non-pulmonary tuberculosis with normal temperature does not contra-indicate general irradiation, although such is naturally given with extra care.

With regard to pulmonary tuberculosis, light treatment was only given in five positive sputum cases, and the results were unsatisfactory. Light treatment does not appear to be of any use for the treatment of pulmonary cases.

There has been no permanent ill-effect, either local or general, caused by artificial light treatment. There were only two patients who had become quiescent and apparently cured at the three light centres who had a recurrence.

The capital cost of lamps and subsidiary equipment at the three centres was: Ashton-under-Lyne, £350; Lancaster, £197; Chorley, £220. The running costs in 1927 per week per patient (including all current, carbons, proportion of time of tuberculosis officer and nurse, fuel, rent, and other standing charges) were: Ashton-under-Lyne, 3s. 3d.; Lancaster, 5s. 7d.; Chorley, 3s. 3d.

There has been a saving in the cost of treating patients by artificial light compared with treatment by other methods. Taking the 110 cases which have become quiescent after treatment at the three light centres in 1927, 44 of the cases would have been recommended for admission to special or general hospitals, and 28 for out-patient treatment at a skin hospital. Knowing the average duration of institutional treatment for such cases and the cost, one can make a comparison between the expense involved in light treatment for these 110 patients and ordinary institutional treatment:

Actual complete cost (including standing charges—*i.e.*, proportion of time of tuberculosis officer, tuberculosis health visitor, fuel, light, cleaning, rent, and depreciation) of 110 patients quiescent and apparently cured by light treatment at county dispensaries in 1927:	Estimated cost of residential and out-patient treatment if 72 of these 110 patients had, in the ordinary course, been sent to hospitals and out-patient departments:
£525.	£1,436.

Thus, apart from the matters of convenience to patients, a shorter period of treatment, and other considerations, there has been a very considerable financial saving—£911—effected on the treatment of these 110 patients in 1927.

The lamp equipment most suitable for the treatment of cases of non-pulmonary tuberculosis at dispensaries (where considerations of patients' work, time of staff, suitability of premises, patients' travelling facilities, have to be allowed for) has been found to be: two long-flame carbon arc lamps for general irradiation; one mercury vapour lamp (Jesionek or Hanovia type) for general or local treatment; one Kromayer water-cooled quartz mercury vapour lamp for local treatment,

It was found essential for the temperature of patients to be taken before receiving light treatment in order that no febrile case be given treatment. On the other hand, it was found unnecessary to take the temperature of patients after light treatment as a routine matter for any condition other than a lesion or suspected lesion in the chest.

The Lancashire County Council have been satisfied with the experimental work, and have authorized the establishment of light centres at fifteen of the county tuberculosis dispensaries, so that the whole county can be covered. Up to the present (November, 1928) twelve centres have been opened, and nearly 550 patients are undergoing treatment.

In order to illustrate the results of treatment several photographs are here inserted. Cases numbered 1, 2, and 3 have concluded light treatment; case No. 4 is still undergoing treatment.

SILICOSIS AND TUBERCULOSIS.

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It is only within recent years that general attention has been paid to the relation between silicosis and tuberculosis. Research work, especially in this country and South Africa, has demonstrated the importance of the subject. Now that radiography is being widely used in the tuberculosis service to assist in diagnosis, it will become increasingly clear that silicosis is in some districts a factor of importance in the incidence of, and mortality from, tuberculosis.

Cases that have been regarded as simple pulmonary tuberculosis will sometimes prove on further investigation, as has happened at the tuberculosis dispensary which is under my charge, to be cases of tuberculosis *and* silicosis. It is natural also that cases of simple silicosis should occasionally be found at tuberculosis dispensaries, because the symptoms of silicosis may in themselves be suggestive of tuberculosis The diagnosis of simple silicosis is important in that the patient may be warned of the danger confronting him, and be kept under observation lest tuberculosis develop at a later date, as so often happens. For the diagnosis of silicosis and an estimate of the stage it has reached, X-ray examination is indispensable. This has been clearly proved by the experience of observers in South Africa.

In the Administrative County of Lancaster no systematic investigation has been made as yet in any of the tuberculosis dispensary areas

PLATE I.

CASE NO. 1, (*a*).—S. W., AGED 50. LUPUS OF FACE.
Duration of disease before light treatment commenced, thirty-three years. Previous treatment: X-rays, scraping, etc.

CASE NO. 1, (*b*).—CONDITION AFTER FIFTEEN MONTHS' TREATMENT WITH GENERAL CARBON ARC BATHS AND KROMAYER LOCALLY.
Disease quiescent. The ectropian which persists is due to contraction of the skin caused by the old fibrous scars below the eyes. Pigmentation fair. Gain in weight, nil.

PLATE II.

CASE NO. 2, (*a*).—F. V., AGED 15. LUPUS OF NECK AND FACE.
Duration of disease before light treatment commenced, ten years.
Previous treatment: X-rays, acid, etc. Condition in November, 1927.

CASE NO. 2, (*b*).—CONDITION AFTER EIGHT MONTHS' ARTIFICIAL LIGHT TREATMENT WITH GENERAL CARBON ARC BATHS AND KROMAYER LOCALLY.
Disease quiesent. Gain in weight, 10 lbs. Pigmentation slight.

PLATE III.

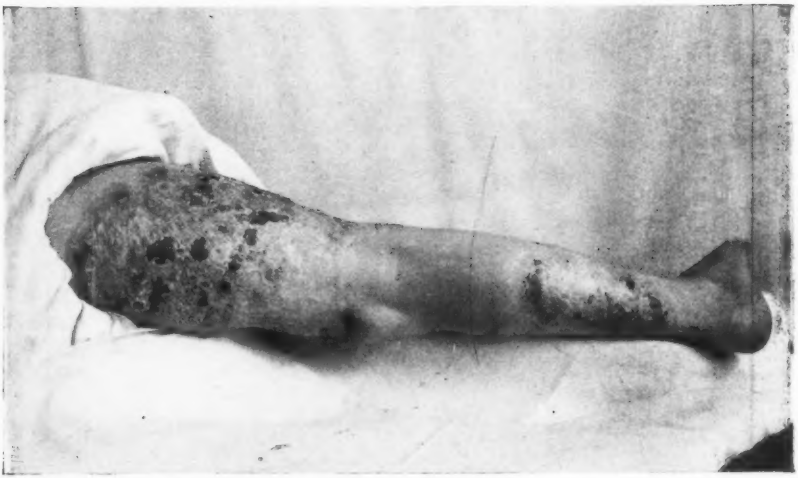
CASE NO. 3, (*a*).—V. L., AGED 27. LUPUS OF HAND.

Duration of disease before light treatment commenced, seven years. Had had surgical treatment seven years previously. Condition in August, 1927, when treatment commenced.

CASE NO. 3, (*b*).—CONDITION AFTER TEN MONTHS' TREATMENT WITH GENERAL CARBON ARC BATHS AND LOCAL TREATMENT BY KROMAYER.

Disease arrested. Scar soft and pliable. Pigmentation very good.
Gain in weight, nil.

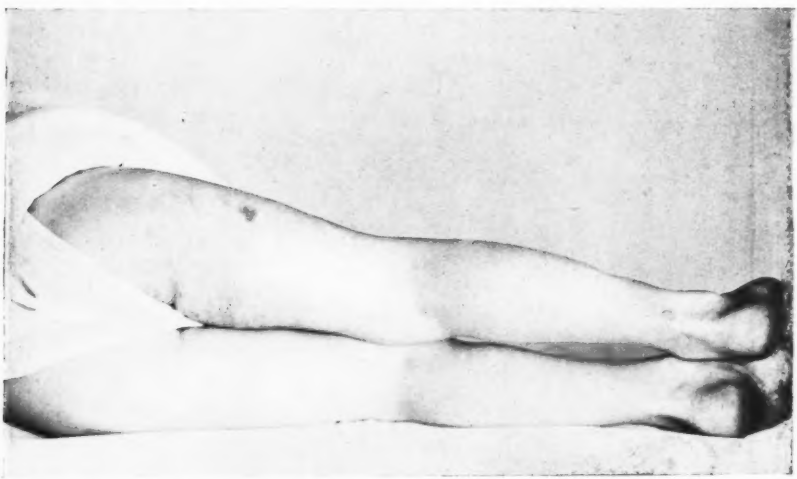
PLATE IV.



CASE NO. 4, (*a*).—M. B., AGED 7. LUPUS, VERY EXTENSIVE, OVER WHOLE OF BACK OF RIGHT THIGH AND LOWER HALF OF BACK OF RIGHT LEG.

Duration of disease before light treatment, five years. Previous treatment: Attended out-patient department of a special hospital seven times in 1924, then placed by parents under a "quack" until seen by a doctor in January, 1928, who referred case immediately to tuberculosis officer.

(Photo taken on ordinary anti-screen plate.)



CASE NO. 4, (*b*).—CONDITION AFTER SIX MONTHS' TREATMENT WITH GENERAL CARBON ARC BATHS (PLAIN CARBONS) AND KROMAYER MERCURY VAPOUR LAMP LOCALLY (52 EXPOSURES).

Disease very much improved and many old active areas cured; patient still continuing treatment. Pigmentation good; gain in weight, 4lbs.

(Photograph taken on panchromatic plate with light filter.)

as to the relative frequency of silicosis in association with pulmonary tuberculosis. The routine use of X-ray examination, however, has revealed cases in such numbers as to suggest that an investigation of this kind is desirable, and especially so for coal-miners.

Collis has pointed out that the mortality rates of the Lancashire coal-miners for the three conditions, bronchitis, pneumonia, and phthisis, are higher than those for other coal-fields, and also higher than for the rest of the population in the later periods of life. The phthisis death-rate of the coal-miners is high in the age period 55 to 64, at a time when silicosis causes an increased mortality. This combination of high death-rates for such a group of workers is, in his opinion, diagnostic of the presence of a "silica dust risk."

In districts of the Administrative County of Lancaster where the industry of coal-mining predominates (*i.e.*, not less than 40 per cent. of the occupied males being engaged in mining), the male death-rate from pulmonary tuberculosis is higher than the corresponding rate for the whole Administrative County (for 1921 it was 0·91 per 1,000 against 0·82 for the county). Now the death-rate from pulmonary tuberculosis among all coal-miners in England and Wales is below that for the general population. The statistical evidence, therefore, suggests strongly that there is in Lancashire an occupational factor at work which raises the death-rate among miners, and that this factor is silicosis.

The silicosis of coal-miners, as Dr. Tattersall has shown, is contracted by miners who sink shafts and cut underground roads through stone and rocks containing silica. Coal-dust alone has been shown by Mavrogordato to have the effect of preventing the fixation of silica in the lungs, and he thinks that the coal-dust aids the lungs in dealing with the small amounts of silica present in the majority of coal-miners. It would appear, therefore, that the miners who contract silicosis are those whose work is entirely, or almost entirely, concerned with hewing or drilling stone. This is strongly supported by the evidence obtained here in individual patients. Without exception the miners who have silicosis are found to have been principally engaged in drilling or hewing stone, and to have worked in an atmosphere of stone dust in contrast to the other miners.

The accompanying group of skiagrams illustrate the various appearances of silicosis and the combination of silicosis with tuberculosis. There have also been included a few skiagrams of other conditions for purposes of comparison. Reduced prints, especially of miliary conditions, do not show fine detail so well as the transparent film of the skiagram, but they will serve at any rate for comparison. A few prints of portions of the lung field on a larger scale are added in order to show up detail. It will be seen that the abnormal appearances in the

lungs of the gold-miner, the stone-mason, the quarryman, and the coal-miner are similar; for while the other constituents of the dust may vary, it is the silica, and that alone, which gives rise to the pathological condition.

It is known that the silica must be chemically in the free state and not combined. It has also been proved that the action of the dust in the lungs is not a mechanical one, due to sharp points and edges of the particles, as was formerly supposed. The particles of dust which are harmful are those which are microscopic in size, not greater than 10 microns in diameter. The precise manner in which the silica acts upon the lung tissue and renders that soil favourable for the development of tuberculosis is still a matter of controversy, one view being that the silica acts as a soluble protoplasmic poison, the other view (Heffernan and Green) being that colloidal silica is formed, which acts in an adsorbent way on the protoplasm of the cells containing the silica, forming a pabulum which is a favourable soil for the growth of tubercle bacilli.

The classification of silicosis into three or four stages is based on the pathology of the condition and on the radiographic appearances. The classification made first by Steuart of South Africa is the one adopted here. The pathology as known may be briefly summarized as follows:

1. The fine silica dust, having found its way into the alveoli of the lungs, is taken up by certain cells of doubtful origin, probably endothelial, which are known as "dust" cells. At first these cells have a clear path along the lymphatics of the lung, and are able to reach the tracheo-bronchial group of glands at the root. These glands then enlarge and become fibrotic. If dust inhalation goes on, the lymphatic channels in the lung become blocked, and the dust cells collect in pseudo-tubercles at the small nodes or glands at the branching of the bronchi and bronchioles.

2. With continued stasis of the lymphatic circulation, the dust cells go on accumulating in the small glands at the bifurcations, and these glands become larger and develop into fibrous nodules of varying size.

3. If the silicosis progresses, the next stage is that of further enlargement of the nodules, with coalescence of the smaller ones and some degree of interstitial fibrosis.

4. If now a tuberculous or other infection is superimposed on the silicosis, large irregular areas of fibrosis are found, with pleurisy and other complications.

The corresponding X-ray appearances are (1) enlargement of root shadows with thickening of the trunk or "bronchial" shadows, and an increase in the linear markings towards the periphery of the lungs, giving rise to a reticulated appearance of the lung field (see skiagrams 6, 7, 8,

and 20). (2) The fine nodular stage. The skiagram shows mottling, coarser than that of miliary tuberculosis, distributed uniformly over the lung fields (see skiagrams 9 and 21). (3) The coarse nodular stage. The skiagram now shows a nodular mottling as in the previous stage, but the mottling is coarser and the nodules are fewer in number (see skiagrams 11, 12, and 22). (4) The fourth and last stage is characterized by aggregation of the nodules, haziness round them, and large clouded areas irregularly distributed (see skiagrams 10, 13, 14, 15, 17, and 18).

Now in discussing the X-ray evidence in silicosis, and silicosis combined with tuberculosis, it has to be emphasized as always that the diagnosis is made on all the evidence available. The occupation of the patient, the clinical symptoms and signs, are of course taken together with the evidence obtained from the skiagram.

In the first stage of silicosis, the skiagram in itself is not diagnostic. Similar appearances are produced by other conditions—*e.g.*, chronic bronchitis and the passive congestion of cardiac valvular disease. In city-dwelling adults, root and trunk shadows vary very considerably, and a considerable increase of the root shadows may be of no significance (see skiagrams 4 and 5). The skiagram appearances, however, added to the history of exposure to silica-containing dust and with the characteristic symptoms, should be sufficient to establish the diagnosis. Skiagram 4, of a card-room worker's chest, is shown to illustrate the fact that dust such as cotton does not produce silicosis, but apparently it can in some cases give rise to other chest affections, such as bronchitis and asthma.

Clinical tuberculosis does not develop so often in the early stages of silicosis as in the later, and when it does it is said usually to assume one of the acute forms of the disease—*e.g.*, acute miliary tuberculosis or acute tuberculous broncho-pneumonia. The radiographic evidence at this stage is of the same importance as in the diagnosis of ordinary forms of tuberculosis, as the lung fields are fairly clear and no silicotic mottling has yet developed (see skiagram 25, a case of acute miliary tuberculosis occurring in a coal-miner).

In the second and third stages of silicosis, those of nodular fibrosis, the skiagram appearances are very characteristic, and quite apart from any other evidence would at once suggest an enquiry as to the patient's occupation. If clinical tuberculosis supervenes at this stage, the lesion may show itself in the skiagram in a way that at once raises suspicion —*e.g.*, in skiagram 14 the shadows in the left upper lobe are strongly suggestive of a tuberculous lesion in addition to the nodular silicosis.

Usually, however, when tuberculosis develops in the nodular and later stages of silicosis, it reveals itself in the skiagram in an atypical way, and at this point the region of controversy is reached. According to most observers who have had extensive experience, both pathological

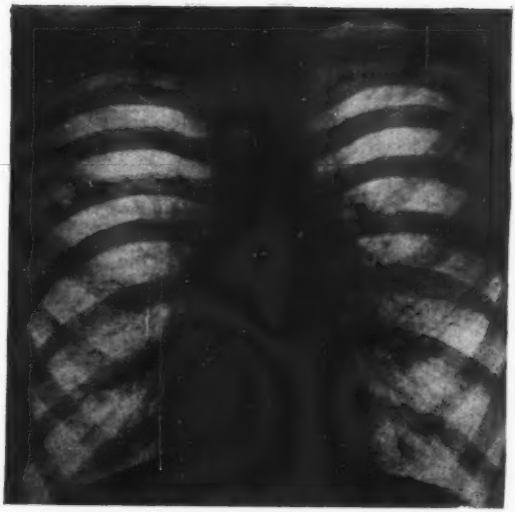
and radiographic, the areas of clouding which appear in the later stages are due to superimposed infection, usually tuberculous, but sometimes pneumococcal or streptococcal. If this be accepted, the radiographic evidence in combined silicosis and tuberculosis becomes of great importance, and grouping of cases based only on clinical and sputum findings is altered considerably. Thus, cases Nos. 9, 10, 11, 12, and 13 are all cases of silicosis where tubercle bacilli have never been found in the sputum. But the areas of clouding which are seen in the skiagram, in addition to the nodular mottling, indicate in this view that a process other than silicosis has supervened, and that the cases are in all probability tuberculous.

There is no doubt (1) that when silicosis and tuberculosis are both present, tubercle bacilli are often extremely difficult to obtain; (2) that such a case may proceed to a fatal termination without tubercle bacilli being found, and yet extensive tuberculosis be found post mortem in addition to the silicosis.

Occasionally there is evidence in the radiogram of advanced silicosis that points directly to tuberculosis—*e.g.*, cavitation, as in skiagram 15, and areas of calcification, as in skiagram 18. The possibility of the infection being other than tuberculous—*e.g.*, pneumococcal or streptococcal—should be kept in mind. For example, in skiagram 18 the fibrosis of the left lung, judging by the clinical evidence, is possibly a post-pneumonic fibrosis.

The question of the infectivity of these combined cases of tuberculosis and silicosis is an interesting one. There is a good deal of evidence available pointing to low infectivity as compared with cases of simple pulmonary tuberculosis. The evidence in my own dispensary area (south-east Lancashire) tends to confirm this view, as the number of positive contacts from such cases has been few compared with contacts from patients with simple pulmonary tuberculosis.

Another point of controversy is as to the priority of the two conditions, whether the silicosis is antecedent to the tuberculosis or *vice versa*. Dr. Watkins-Pitchford in South Africa thinks that the great majority of cases of simple silicosis would not have developed into such but for the presence of a tuberculous element in the lungs. Clinical evidence neither proves nor disproves this view. Skiagram 16 illustrates a case of considerable interest from the point of view of priority of infection. The skiagram, I think, indicates that at one period in life this man, who became a stone-mason when aged twenty, had massive tuberculous disease in both lungs, and that the lesions dried up and calcified. At the age of forty-nine, after being a stone-mason for twenty-nine years, he breaks down, and examination of the sputum reveals the presence of tubercle bacilli. He is now going downhill with acute pulmonary tuberculosis. It is very unlikely that with silica

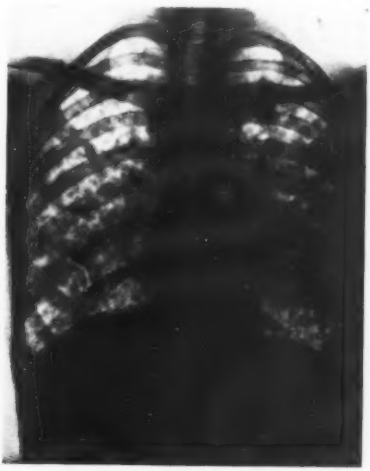


SKIAGRAM NO. 1.—SKIAGRAM OF CHEST OF ADULT MALE AGED 46 YEARS.

Living in an industrial area. No clinical or X-ray signs of disease in the chest. The root and "bronchial" shadows are not excessive, and may be regarded as "normal."

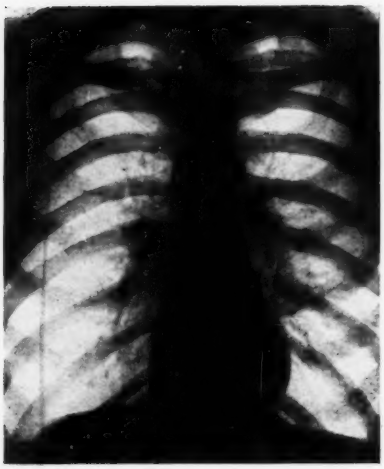
SKIAGRAM NO. 2.—ACUTE MILIARY TUBERCULOSIS IN FEMALE AGED 16.

No definite signs in the chest. No sputum was obtained for examination at any time. Referred to dispensary with tuberculosis of ankle joint. Chest X-rayed as a routine measure. Fine mottling uniformly distributed throughout both lungs. Heart vertical. (See skiagrams Nos. 23, 24.)



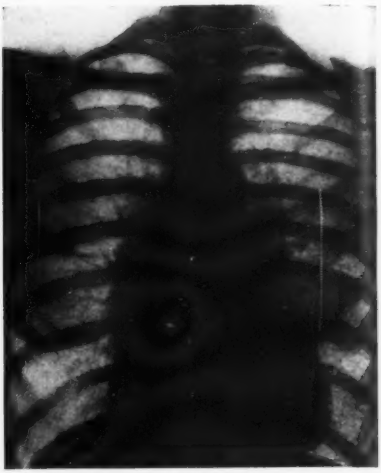
SKIAGRAM NO. 3.—PULMONARY TUBERCULOSIS IN FEMALE AGED 17.

Examined at dispensary as a contact, her mother having died of pulmonary tuberculosis in July, 1928. At work until two days before examination. Sputum positive. Disseminated granular type. The mottling is coarser than that of acute miliary.



SKIAGRAM No. 4.—MALE AGED 38. OCCUPATION, IN CARDROOM OF COTTON MILL FOR TWENTY-FIVE YEARS.

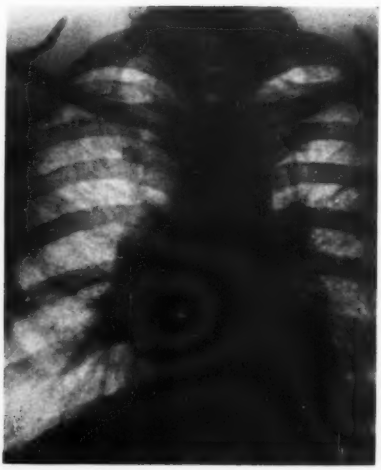
Symptoms of asthma and bronchitis for several years. Sputum negative. No signs of tuberculosis found. Skiagram shows increase of the root shadows on both sides, with thickening of the trunk shadows in the vicinity. Emphysema at both bases. No indications of silicosis. The heart is vertical, a very common finding in cases of asthma as well as in cases of tuberculosis.



SKIAGRAM No. 5.—CASE OF MITRAL STENOSIS, SHOWING THE ACCENTUATED ROOT SHADOWS WITH THICKENED TRUNK SHADOWS SIMILAR TO THE APPEARANCES SEEN IN EARLY SILICOSIS, BUT DUE HERE TO PASSIVE CONGESTION.

SKIAGRAM No. 6.—MALE AGED 46. GOLD MINER IN SOUTH AFRICA FOR TWELVE YEARS TO 1914.

Illness dated from 1914. Chief symptom shortness of breath. Sputum always negative. Chest signs—air-entry generally poor and expansion generally diminished. Skiagram shows considerable increase in the root shadows, with thickening of trunk shadows, and slight nodal mottling towards the bases. An early degree of silicosis. (Date of skiagram, February 27, 1928.)

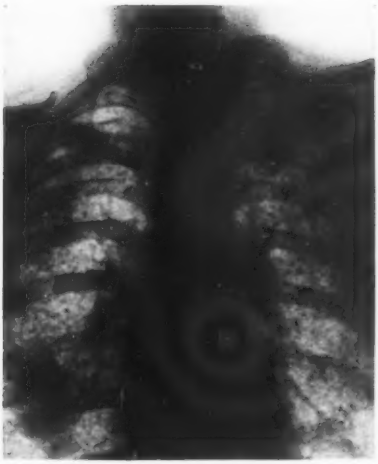


SKIAGRAM No. 7.—MALE AGED 50. GOLD MINER IN SOUTH AFRICA FOR ELEVEN YEARS TO 1914.

Left the mines on account of silicosis. Symptoms commenced in 1914 with dyspnœa. Sputum always negative. Chest signs—considerably diminished chest expansion and poor air-entry generally. Skiagram shows great increase in the root shadows, and marked thickening of the adjacent trunk shadows, with a slight amount of nodal shadowing. Fairly early silicosis, somewhat more advanced than case No. 6. (Date of skiagram. May 30, 1927.)

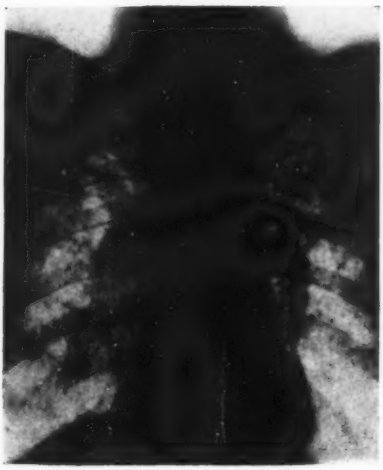
SKIAGRAM NO. 8.—MALE AGED 72. GOLD MINER IN SOUTH AFRICA FOR ELEVEN YEARS UNTIL 1919.

Left the mines owing to silicosis. Symptoms commenced with shortness of breath, 1916. Sputum negative. Chest signs consisted of poor air-entry and poor expansion generally. Skiagram shows increased root shadows and considerable thickening of trunk shadows throughout both lungs. Well-marked nodal shadowing with tendency to form larger areas of fibrosis. A more advanced stage of silicosis than the preceding cases. (Date of skiagram, January 7, 1926.)



SKIAGRAM NO. 9.—MALE AGED 51. GOLD MINER IN SOUTH AFRICA FOR EIGHT YEARS TO 1913.

Left mines on account of silicosis. Symptoms commenced in 1913 with cough and shortness of breath. Sputum always negative. Chest signs consisted of weak breath sounds all over, and generally poor expansion. Skiagram shows a nodular fibrosis throughout the whole of both lungs, with one area of massive fibrosis in the right lower zone. Root shadows are massive with thickened trunk shadows. The appearances are mostly those of the second stage of silicosis, except for the clouded area in the right lower zone. (Date of skiagram, May 23, 1928.)



SKIAGRAM NO. 10.—MALE AGED 72. GOLD MINER IN SOUTH AFRICA FOR NINE YEARS UNTIL 1902.

Left the mines owing to silicosis. Sputum always negative. Chest signs—generally diminished expansion with poor air-entry all over. Skiagram shows a diffuse nodular fibrosis and areas of massive fibrosis situated chiefly in the upper zones of both lungs. Right diaphragm peaked. Indications of mediastinal pleurisy on the right side. No tubercle bacilli have been found in the sputum. The heart is tending to become vertical. (Date of skiagram, March 19, 1927.)

SKIAGRAM NO. 11.—MALE AGED 52. STONE-MASON FOR OVER TWENTY YEARS.

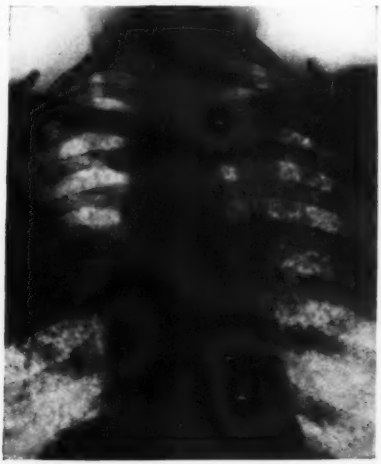
Symptoms: cough and shortness of breath. Chest signs indefinite. Weakness of r.m. especially over the right lung. No sputum has been obtained at any time for examination. Skiagram shows a nodular fibrosis throughout the whole of both lungs. Root shadows excessive. Heart vertical. The nodular shadows are becoming larger in both upper zones. (Date of skiagram, August 20, 1928.)

SKIAGRAM NO. 12.—MALE AGED 56. COLLIER FOR OVER THIRTY YEARS.

Symptoms: cough and shortness of breath for two years. Sputum always negative. Chest signs—crepitations all over the left lung, and also at the right base. Percussion note impaired generally. Family history of tuberculosis. Skiagram shows a diffuse nodular fibrosis throughout both lungs, with areas of massive fibrosis in the vicinity of the left root. (Date of skiagram, November 2, 1925.)

SKIAGRAM NO. 13.—MALE AGED 48. COAL MINER FOR THIRTY YEARS.

Duration of symptoms, five years. Cough and shortness of breath. Chest signs indefinite. Poor expansion and general weakness of r.m. Sputum always negative. Skiagram shows nodular and massive fibrosis throughout both lungs. Tubercle bacilli have never been found in the sputum. The aorta is very prominent. Wasserman negative. (Date of skiagram, November 8, 1926.)



SKIAGRAM NO. 14.—MALE AGED 49. GOLD MINER IN SOUTH AFRICA FOR FIVE YEARS UNTIL 1913.

Left mines on account of silicosis. He had the usual symptoms which commenced in 1913. Sputum negative 1926. Positive in March, 1928. Skiagram shows a diffuse nodular fibrosis in both lungs, with area of massive shadowing in the mid zone of the right lung suggesting interlobar pleurisy. There is an increase in the deposits in the left upper zone, with marked thickening of the trunk shadows downwards to the root. (Date of skiagram, March 27, 1928.)

SKIAGRAM NO. 15.—MALE AGED 58. GOLD MINER IN SOUTH AFRICA NINE YEARS UNTIL 1914.

Chest symptoms commenced in 1914 with shortness of breath. Chest signs consisted of diminished expansion all over with crepitations over lower two-thirds of left side, back and front, and a few crepitations at right base. Sputum negative in 1925 and 1926, but found positive in November, 1927. When seen in 1927, symptoms were much the same as in 1925 and 1926, with the exception that patient had lost 14 lbs. in weight. Skiagram shows advanced silicosis, but, in addition, there is definite cavitation in middle and lower zones of left lung with massive fibrosis. (Date of skiagram, May 5, 1928.)

SKIAGRAM NO. 16.—MALE AGED 49. STONE-MASON FOR TWENTY-NINE YEARS.

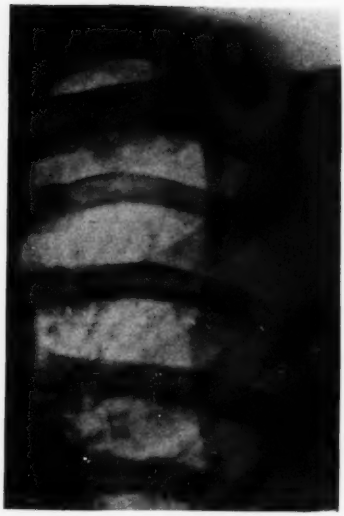
Patient gave duration of his symptoms, cough, sputum, and shortness of breath as three months. Twenty years ago he had "congestion of lungs." Then kept well till present illness commenced. Sputum positive June 29, 1928. Skiagram shows massive rounded shadows of calcareous density in upper half of both lungs. The root shadows are excessive, and trunk shadows are accentuated with some nodular mottling in lower zones. The skiagram appearances indicate old, healed tuberculous lesions and a slight degree of silicosis. This case is interesting in that sputum is positive and present symptoms of recent date. (Date of skiagram, June 11, 1928.)

SKIAGRAM NO. 17.—MALE AGED 48. GOLD MINER IN SOUTH AFRICA.

Left the mines in 1919 owing to silicosis. Chest symptoms commenced August, 1922. Sputum positive. Skiagram shows dense shadowing of the whole of the left side of the chest with heart, mediastinum, and trachea, displaced to the left. On the right side there are indications of a nodular fibrosis over the whole lung, with some clouding in the upper zones. The appearance of the left side indicates super-imposed infection, the nature of which is settled by the sputum result. (Date of skiagram, May 5, 1928.)

SKIAGRAM NO. 18.—MALE AGED 62. STONE-MASON FOR FIFTY YEARS.

Recently had an acute illness which his doctor stated was clinically a pneumonia. Sputum has been examined on seven occasions with a negative result. Skiagram shows dense shadowing of the upper two-thirds of the left side with some displacement of heart and mediastinum to the left. On the right side the skiagram shows a nodular fibrosis involving the whole lung. (Date of skiagram, August 14, 1928.)



SKIAGRAM NO. 19.—PORTION OF "NORMAL" LUNG TO SHOW DENSITY AND THICKNESS OF THE TRUNK SHADOWS.

SKIAGRAM NO. 20.—SKIAGRAM OF PORTION OF CHEST OF COAL MINER WITH EARLY SILICOSIS

Thickening of trunk shadows with reticulation and slight nodular fibrosis.

SKIAGRAM NO. 21.—SKIAGRAM OF PORTION OF LUNG OF GOLD MINER WITH FINE NODULAR SILICOSIS.

Same case as No. 9.

SKIAGRAM NO. 22.—SKIAGRAM OF PORTION OF LUNG OF COAL MINER WITH COARSE NODULAR SILICOSIS.

Same case as No. 12

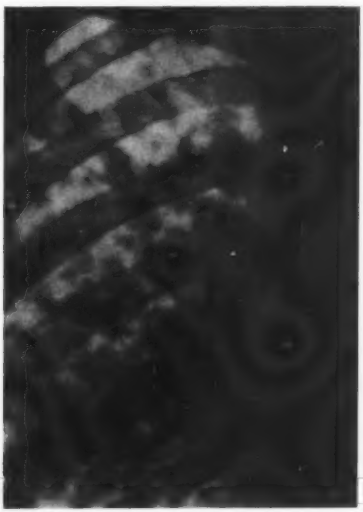
SKIAGRAM No. 23.—PORTION OF LUNG WITH ACUTE MILIARY TUBERCULOSIS.

Same case as No. 2, but taken at dispensary seven weeks earlier.

SKIAGRAM No. 24.—THE SAME PORTION OF LUNG SEVEN WEEKS AFTERWARDS, SHOWING THE INCREASE IN THE NUMBER OF THE TUBERCLES.

SKIAGRAM No. 25.—PORTION OF LUNG SHOWING ACUTE MILIARY TUBERCULOSIS IN A COAL MINER AGED 43.

Died five weeks after date of skiagram. Tubercle bacilli found in small numbers towards the end of his illness.



SKIAGRAM No. 26.—PORTION OF LUNG SHOWING LOBULAR TYPE OF PULMONARY TUBERCULOSIS. MOTTLING PSEUDO-MILIARY, COARSER THAN IN ACUTE MILIARY.

Same case as No. 3.

dust already present in his lungs he would have put up such a good resistance to his first attack of tuberculosis, and it therefore probably occurred early in life. Is his present disease due to a re-infection or to a recrudescence of the old disease? With so marked evidence of old tuberculosis in his lungs one would have expected in this case that the silicotic process would have been much more advanced than the skiagram shows it to be.

Eight of the skiagrams which accompany this paper are of gold-miners from South Africa who, after developing silicosis there, have returned to their original homes in Lancashire. They all belong to the Furness district of the county. The measures taken in South Africa to deal with the problem of silicosis and tuberculosis among the gold-miners, and the success which has attended them, form an object-lesson in the value of preventive methods. All candidates for employment in the mines are examined in order to exclude as far as possible all tuberculous individuals. It is interesting to note that the Medical Bureau at Johannesburg now refuse for employment men whose heart shadow on the skiagram is of the vertical or tubular type, although no definite indications of tuberculosis in the lungs are present. Experience has taught that these men are very liable to develop both silicosis and tuberculosis. Half-yearly routine examinations are made of all persons employed in the mines. Any workers found with signs of silicosis or tuberculosis are eligible for compensation. Those with tuberculosis are discharged from the mines; the men with silicosis only have the option of remaining at work or accepting compensation.

The practical outcome of the South African experience is that no person with tuberculosis, or suspected of having the disease, should take up an occupation where he will be exposed to the inhalation of silica dust, and this for two reasons—the danger to himself and the danger to his fellow-workers, who so far may be free from clinical tuberculosis. That the preventive work in South Africa has been successful may be judged by the figures given in the report of the South African Miners' Bureau for the year ending July 31, 1924. The rate of incidence for cases of tuberculosis with silicosis for that year was 1·6 per 1,000 as compared with 8·0 per 1,000 before 1919-1920.

From the evidence available in this area I have no doubt that if the same measures were applied here in all industries where there is a silica dust risk, the mortality rate from pulmonary tuberculosis would be favourably affected.

I am much indebted to Dr. E. H. A. Pask for permission to publish skiagrams 6, 7, 8, 9, 10, 14, 15, 17, which were taken at High Carley Sanatorium, and also to Dr. Laird for permission to publish skiagram 2, which was taken at Rufford Pulmonary Tuberculosis Hospital.

THE ABSURDITY OF OPEN-AIR TREATMENT: A NOTE ON THE APPLICATION OF ULTRA-VIOLET RAYS IN THE TREATMENT OF TUBERCULOSIS AND OTHER DISEASES.[1]

By DUNCAN C. L. FITZWILLIAMS,

C.M.G., M.D., CH.M., F.R.C.S.,

Surgeon and Lecturer in Clinical Surgery, St. Mary's Hospital; Surgeon to the Hospital for Children, Paddington Green, London, and the Mount Vernon Hospital for Tuberculosis; Consulting Surgeon, Margaret Street Hospital for Consumption. Author of "The Tongue and its Diseases."

We all know people who are never in the wrong, or, at least, who never own to it; others of us acknowledge our faults more or less unwillingly. There are none of us, however, who fail to see the faults and mistakes of others. When large bodies of men and women hold different opinions, it is obvious that either one side is right and the other wrong, or that truth lies divided between them. This we see commonly in questions of religion and politics. When, however, a profession holds a wrong opinion, other factors come into play, and anyone who states anything contrary to the accepted belief, however true it may prove to be, is generally in for a very bad time. This has been the case through the ages: the wretched Galileo, during his persecution by the Holy Inquisition, must have bitterly repented that he lived so long before his time. Those, you may say, were the dark ages, but what of Lister, who lived in what we delight to think was an enlightened age? It was only his mild and generous nature which enabled him to rise above the storm of opprobrium and abuse which his teaching and practice raised, and he was fortunate in living long enough to see the establishment of his ideas even in his own country, which was the last to accept them. The truth is that, when a profession is in the wrong, it cannot be converted; the older generation, which have been bred in certain ideas and have lived most of their lives in those ideas, cannot change them. That generation dies out, and is replaced by another with different ideas, different theories, and different ways of regarding things. The reformer, therefore, really speaks to the next generation, and he is a wise man if he can close his ears to the clamour, the controversy, and the abuse of his own associates.

[1] As readers of this Journal understand, authors are alone responsible for views expressed in their contributions. Although we do not offer any opinion regarding Mr. Fitzwilliams's claims, it would seem that the paper is so thought-compelling and suggestive as to merit place in this Journal.—Editor, *B.J.T.*

When, therefore, one states that the ideas that the profession have held with regard to the open-air treatment of disease have been utterly wrong, one does not expect agreement from those who have spent their lives in treating disease according to this idea, or whose time has been expended in propagating this theory. Now I do not want anyone to mistake what I shall here say: the treatment of disease by open-air methods is right in every way. What is maintained, and what becomes obvious to every thinking logical being, is that the theory on which it is founded is absolutely fallacious and absurd.

Homeopathy was quite right in breaking away from the monstrously massive doses of the older generation; but the theories put forward to support the movement, though accepted by a small body of the profession, were, as I contend, as monstrous as the doses they preached against.

I suppose that the advocacy of open-air treatment had its origin with Laennec, the father of the scientific investigation of diseases of the chest. One remembers in Rudyard Kipling's "Rewards and Fairies" mention is made of the fact that the window must be propped open with a wand of willow of a certain length. There were no sashes to the windows in those days, and they had to be propped open by something. The kind of wood they were propped open with was most important; much virtue lay in what it was done with, and willow was by far the best.

The open-air treatment gradually developed, and really was at the height of its influence twenty-five to thirty years ago. Sanatoria were built with windows that would not shut, balconies were constructed outside wards, huts were put in gardens, and it was even fashionable for delicate people to sleep in the open air, wet or fine, and in frost or snow. There was no limit to the enthusiasms with which the cure was pursued, nor did it confine itself to tuberculosis. Ordinary surgical cases were exposed ruthlessly—I use the word advisedly—to the inclemency of the weather, and as I believe with great detriment to many patients.

I remember coming as a Resident to a large Children's Hospital in London, the Medical Superintendent of which was what we termed a "fresh-air fiend." He would permit no windows in the hospital to be shut, the wards and corridors were bitterly cold, and the gusts of wind were unbelievable. If it rained, slatted blinds might be drawn down, but no windows must be closed. How we Residents hated it that winter! Tuberculous cases were treated on the balconies, and, having a chronic disease, they got used to the abnormal surroundings; but no difference was made in an acute disease like appendicitis, and the shivering child was exposed and its abdomen dressed amidst the whirling snowflakes a few days after it had exchanged its warm and stuffy nursery for the rigours of the hospital. This is really no exaggeration.

There was no end to the absurdity of the fresh-air treatment as it was preached and practised in season and out by the enthusiasts.

Money was no object, and millions were spent upon the fresh-air treatment, till the country was satiated and could bear no more. Not only was it so in this country, but throughout the continents of the civilized world the same thing was taking place, although fortunately usually under better climatic conditions than ours. Then came a pause, and later the fresh-air treatment seems to have gradually changed its character.

The Alpine Homes, perhaps, first led the way, and to the fresh-air treatment was added a graduated and increasing amount of exposure of patients to the beneficent influence of the sun. This progressed until, imperceptibly, exposure to the sun became almost the chief feature of the fresh-air treatment, and even the much-vaunted draughts, winds, and gales were discreetly limited.

Lord Mayor Treloar's Hospital and College at Alton, which has developed so marvellously under Sir William Gauvain, was, perhaps, the first institution in this country to follow and chart carefully the effects of exposure of each child to the sun's rays. Artificial sunlight was then introduced, and now is taking the world both medical and lay by storm, and completing the revolution in our ideas on the open-air method of treating disease.

What, in reality, was this fresh-air treatment of tuberculosis and other diseases? The windows were opened, the patients were placed on balconies or in the garden, and they got well. Why? The medical profession, speaking hastily, said it was the fresh air, and has backed that opinion ever since. I am quite sure the younger men do not endorse this view now, except, perhaps, in the presence of their elders; they are beginning to talk a language strange to leaders of the older generation.

The truth was that the windows were opened and the patients exposed, not only to the fresh air, but to the infinitely more important invisible rays of the sun. Not to the direct rays of sunlight—those already came through the window—but to those invisible, as it were, silent rays beyond the violet end of the spectrum, the ultra-violet rays, which do not come through any window glass however large the casement. These rays have only had their importance established lately, but it is to these rays and to nothing else that the entire success of the fresh-air treatment of disease was due. In fact, though it has never yet been admitted, the open-air treatment of disease was wrong in principle, and had nothing really to recommend it in theory. Nevertheless few therapeutic measures have been blessed with such fortunate results.

Curiously enough, for years members of the medical profession have

had the key to the situation in their hands, for they have long taught that bacilli exposed to the direct rays of the sun were rapidly killed—they never said that fresh air killed them. Yet the deduction lagged behind knowledge for more than a generation. There is no need to recall the sun-baths of the ancients, or the reintroduction of the sun-bath cult in this and other countries—its latest society adoption as at the Italian Lido, though the object of exposing the male and female form there need not necessarily be ascribed solely to medical reasons.

Radium, which of all other substances in nature employs its energy in the form of rays, must be kept in thick walls of lead. Lead is the most powerful obstacle we have to the penetration of these rays. All our window glass at the present moment is made containing the salts of lead. This prevents any of the health-giving ultra-violet rays from penetrating into a room. No sooner did the scientists recognize the importance of the ultra-violet rays than they set to work to find a glass which could be made which did not contain lead.

It was found, chiefly by researches of Lamplough in this country, that a glass could be made from quartz which would allow the penetration of a large number of these. It is made by Pilkington Brothers It was fitted to some of the animal houses in the Zoo and in some of the conservatories at Kew, and was found to answer completely the requirements demanded.

The German scientists, however, were also at work, and have produced a glass, *Ultra-Vite*, which is claimed to be softer, not so brittle, and considerably less expensive. It lets through practically all the active ultra-violet rays, and is unaffected by atmospheric exposure. This glass has been introduced into this country as *Sunray Glass*, with head offices at 22, Northûmberland Avenue, London, W.C. There are two grades: the first made for windows, while the second grade glass is suitable for factories, schools, asylums, hospitals, conservatories, hen-houses, and skylights. This cheaper glass can be used where health is the first and only consideration. It is possible, therefore, to fit grade one in windows where appearance is important, and grade two where it is secondary.

The effect of the introduction of Sunray Glass will, in a short time, be that lead glass will become obsolete in architecture. As the trend of modern thought becomes more and more pronounced, it will be recognized that no house, no office, no school, no factory, no asylum, no hospital, nowhere, in fact, where human beings pass a considerable number of hours a day, should be fitted with glass which deliberately deprives them of the ultra-violet rays. It is not necessary for the sun to be shining, for it is found that good results follow exposing patients to the sky even on days when the sun is obscured behind clouds; the ultra-violet rays still pass through the air and are able to act. Sunray

windows are no barrier to the free passage of these rays, and a worker in an office fitted with Sunray Glass may become as sunburnt as the worker in the field.

It is no longer necessary to say how useful the ultra-violet rays are now known to be; for lamps for their manufacture have already been installed in every hospital, and now lamps of more or less power can be bought in the shops for moderate prices. These lamps, however, are dangerous when used without medical supervision, and are capable of inflicting severe burns. Such treatment by intensive doses for short periods by artificial means is not to be compared for one moment with the natural absorption of small doses of the ultra-violet rays from the natural source—namely, the sun—which Sunray Glass now places at our disposal. Nor are the artificial rays from lamps really imitations of the sun's rays; every scientist knows this. As time goes on, we may even see legislation introduced forbidding the use of the old-fashioned lead-glass window so inimical is its employment to the public health. The time for this, however, is not yet.

The great thing which we, as a medical profession, must recognize is that the myth of the fresh-air treatment of disease is at an end, and that the true influence is being recognized—namely, the healing by the ultra-violet rays.

The hardships of exposing patients to the rigours of our unkindly climate should now be over; for the best results may now be attained by changing the glass in the windows of the patient's home, and the cure can be continued whether the windows be open or shut. Solaria, or sun-parlours, are being constructed in connection with convalescent homes, and even hotels in various parts of the country are being fitted with glass which will not obstruct the ultra-violet rays of the sun. I believe that in five years' time there will not be a hospital or sanatorium in the country fitted with the old-fashioned glass.

As I said at the beginning of this paper, the ideas I have endeavoured to express may be utterly rejected by the older generation of medical advisers, but in ten years' time, if I mistake not, no one will trouble to repeat them, for they will have become accepted as established facts.

THE CARE OF THE TUBERCULOUS CRIPPLE.

By M. FORRESTER-BROWN,

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WITHIN the limits of this brief article it is only possible to sketch in outline the principles which should govern the care of the tuberculous cripple, using that term to denote the case with tuberculosis of the bones and joints. Incidentally, if the preliminary measures are effective, he should never be a "cripple" at all!

The principles which we have to consider are:

1. *Preventive treatment* to cut off the sources of infection, or reduce the dosage, and to maintain the subject's resistance at a high level.

2. *Early diagnosis* as the basis of early treatment.

3. *Thorough treatment*, which should be begun early, persisted in over a sufficient period, in what is essentially a chronic and remittent disease, and directed to the general, as well as the local, condition of the patient.

4. *Provision of facilities for supervision* over many years to guard against relapse, or recognize it as soon as it occurs.

5. *Guidance of the healed case in the choice of a vocation*, so that he shall avoid occupations which put a direct strain on the once damaged tissues, and may thus lead to the awakening of quiescent foci of tuberculosis.

Let us briefly consider each of these aspects of the matter. It has been the neglect of one or other of them which has in the past led to tuberculous disease being regarded as most unsatisfactory, not to say uneconomical, to treat. If any one of these essentials is neglected, the money spent on the rest is apt to be wasted; but if all are tackled with energy, there is considerable financial saving to the community, as well as reduction of suffering and unhappiness for the individual.

1. *Preventive treatment* is so familiar to the readers of this JOURNAL as to need little mention here. It has been demonstrated in a number of enlightened communities that the provision of clean milk and the elimination of tuberculosis from herds has reduced the incidence of "surgical" tuberculosis enormously. The other source of infection, the human carriers with active lung disease, is a serious one, especially for young children whose parents are affected. The French system of boarding them away from home, or immunizing them with tuberculin, seems the most practical way of meeting this menace. It is this source

which has been most evident in the cases of bone and joint tuberculosis which have come under the writer's care through the Bath, Somerset, and Wilts Orthopædic Scheme.

2. *Early diagnosis* presupposes special education of the medical student and of the general practitioner, as well as facilities for the latter to consult easily with a specialist, who must have at his command opportunities for X-ray examination, and also for in-patient observation of certain selected cases. The orthopædic clinic, whether organized by a public health authority or voluntary enterprise, provides such facilities for consultation for the family doctor: but, unless arrangements are also made for medical students to attend such clinics, it will mean that a generation of practitioners will arise who will never have seen anything of the diagnosis and treatment of surgical tuberculosis. Indeed, it is to be feared that we already have such a generation with us, and that the very system which was designed to secure early treatment will have defeated its own end. However keen and willing he may be, the general practitioner has not time to come and fill in *large* gaps in his education *after* he is in practice.

As regards the diagnosis itself, it should be remembered that chronic synovitis in adults has many causes, of which tuberculosis is one, but not the most frequent in the average community. On the other hand, in children every chronic synovitis should be treated as tuberculous until it is proved not to be so, for only thus can rapid and extensive destruction of important tissues be avoided in a considerable number of cases. It is true that modern methods are demonstrating that a number of joint conditions in children, which were formerly regarded with confidence as tuberculous, are not such. An instance of this is *coxa plana* (Perthe-Legg-Calvé disease of the hip), a softening of the head of the femur, the symptoms and signs of which are often indistinguishable from early tuberculosis, and continue so for weeks or even months. Sometimes X-ray examination will show the characteristic flattening of the head at quite an early stage, and then, as the disease seems to run its course almost unaffected by treatment, this confirmation of the diagnosis may save the patient and the community months of expensive in-patient care. On the other hand, a case with identical symptoms may, at the end of six months, show on the skiagram the eating away of head or neck of femur, or upper margin of acetabulum, characteristic of tuberculosis, in which case the preliminary weeks of recumbency in an open-air hospital have not been wasted. Even with tuberculosis, the best treatment cannot guarantee against some destruction, but it can prevent the added deformity which is inevitable when body weight and muscle spasm are allowed to aggravate the condition.

3. *Efficient treatment* of bone and joint tuberculosis involves: (*a*) *pro-*

longed treatment until the focus is completely quiescent; (*b*) *general measures* to improve the nutrition of the body and increase its general powers of resistance; (*c*) *local rest*, followed later by carefully controlled use.

The duration of treatment in hospital varies with every case, but one may say roughly that one year's recumbency in the open-air is required for lower-limb cases of any severity in order to induce fibrosis (local imprisonment of the invading organisms); then a second year of graduated use under skilled observation, often in hospital; and finally a year of restricted freedom at home, subject to regular inspection by an expert. Cases of advanced disease of the spine or hip, and early cases whose natural immunity is poor, may take much longer.

The general treatment of the case includes *rest* in bed, complete for the lower limb, as already mentioned, partial for the upper limb; this rest should be in the open air, to which the skin of the whole body should be exposed for some part of each day, even in winter, as the *cold air* on the body-surface acts as a stimulant to the circulation, the lungs, and the appetite, and so compensates in some measure for the lack of exercise. *Abundant food*, rich in vitamins and appetizing in quality, is another essential requisite; the eternal stews and milk slops of the ordinary voluntary hospital do not fulfil this latter requisite. Vegetables and fruit should form a considerable part of the diet, as they help to counteract the constipation induced by lack of exercise; probably milk need not exceed the normal proportions for an uncomplicated case.

Sunlight to the skin of the whole body is a valuable stimulant to the patient's resistance to infection. It is found that cases which have been making slow progress during the winter may take on a sudden spurt when the sun gains in ultra-violet power in the spring. The mercury-vapour lamp given in the open air in winter is a valuable substitute, but its dosage is hard to regulate because these cases recumbent on iron splints, or walking in plaster-of-Paris apparatus, cannot have reliable weight-charts kept. Local treatment for a superficial lesion has most dramatic results, but a deep sinus is probably best dealt with by general exposure of the whole body. The writer has an objection to the treatment by open arc lamps in that they necessitate keeping the patient for long periods in a hot atmosphere, all the more unbearable when he is used to an open-air life; while the final cold douche is difficult to administer to cases in apparatus. If special devices for the purpose are resorted to, as at Heatherwood, great demands are made on the nursing staff, and the routine work of the institution is difficult to organize.

Among the measures which raise the general resistance of the body, an important place must be given to the mental side, for a happy

atmosphere and a reasonable amount of *social life* and suitable *occupations* play a most important part, especially when we remember the long periods which these cases have to spend away from their normal family life. The provision of schooling for all cases between two and sixteen years enables the institution to benefit by grants from the local education authority, as well as to improve the tone of its inmates. The training and enrolment of patrols of Boy Scouts and Girl Guides add a pleasing social side to the life of the patients; it is usually wise to have this work conducted by adult Rovers and immune adolescents in order not to risk the introduction of infectious diseases by children from outside.

This question of *excluding infection* is a difficult one, as visitors must be allowed at least once a month to cases who are to spend such long periods in hospital. If tuberculous cases only are treated in the institution, it is good to keep each new case for three weeks in an isolation cubicle, before admitting it to the general ward. If, however, the hospital takes in all kinds of orthopædic cases, many for small operations and not more than three weeks' stay in all, such a precaution is impracticable.

Local treatment of tuberculous bone and joint lesions demands the provision of a variety of splints, which, in the interests of both economy and efficiency, should be manufactured in hospital workshops, which may quite well employ a number of ex-cripples. The proper application of the splints is only ensured when the nursing staff are specially trained for the purpose, and enjoy favourable conditions as to salary and quarters, which make them willing to stay in the institution many years. The surgeons also should have leisure to supervise the apparatus often and carefully, conditions which usually presuppose a salary.

Splint treatment—*i.e.*, the provision of local rest—can often be supplemented, and sometimes be replaced, by judicious *operations*, designed to produce bony ankylosis in a joint where there is no hope of restoration of useful movement. Such operations can never take the place of the essential general treatment, though they may enable its duration to be reduced.

4. The provision of facilities for *expert supervision* of cases after discharge from hospital is best met by the organization of orthopædic clinics on the lines of Dame Agnes Hunt's pioneer ones in Shropshire, which are visited weekly by a Sister specially trained in an orthopædic hospital and skilled in the management of apparatus and in the application of plaster-of-Paris, and also visited once a month by a surgeon from the orthopædic hospital. This system permits of the discharge of cases from hospital once their general health is good and their local condition quiescent; whereas, if they can only be seen at long intervals, they must be kept in until they appear cured, a very different matter. In an area where

there is a good organization of health visitors under the local authority, the supervision can be carried into the patient's home, but this cannot replace inspection of the apparatus by the orthopædic Sister, for of this skilled class only a limited number will ever be available.

5. Securing of *suitable employment* for the healed case is probably the most difficult feature of all in the work. It is so dependent on local industrial conditions in each area, and the present state of general unemployment makes the task well-nigh hopeless. It should be remembered that, while open-air occupations are good for the patient's general health, they are apt to involve heavy lifting or persistent stooping, all throwing undue strain on spine, hip, and knee. Therefore a light occupation in a modern, well-ventilated factory may actually be better for a given case.

THE FIRST INTERNATIONAL LIGHT CONFERENCE AND PROFESSOR ROLLIER'S JUBILEE.[1]

By Dr. P. ROUSSEL,

French Secretary of the First International Light Conference.

The idea of an International Light Conference which should be devoted entirely to the subject of Light — Natural Sunlight and Artificial Light—came into being at Ghent in June, 1927, during the Whitsuntide Congress of the Royal Institute of Public Health. Heliotherapy figured in the programme of one of the sections, but at that time our work evoked only a feeble response on the part of the audience then present. In a friendly exchange of views among the delegates we deplored this indifference, and vowed one day to have a conference of our own, a special conference, at which the great lady, Light, would not merely be among the guests, but would herself be hostess. Professor Rosselet of Lausanne at once made the suggestion that this first demonstration should be timed to coincide with the twenty-fifth anniversary of Dr. Rollier's work at Leysin in 1928. This suggestion was received with enthusiasm. Thus it was that Lausanne and Leysin quite naturally came to be the centres selected for the First International Light Conference (Physical, Biological, and

[1] We are indebted to the courtesy of Dr. C. W. Saleeby, Chairman of the Executive Committee of the Sunlight League, the headquarters of which are at 29, Gordon Square, W.C. 1, and the editor of *Sunlight* for loan of the blocks, which have enabled us to reproduce the accompanying illustrations which appeared in the December issue of *Sunlight*, Vol. I., No. 7 (price 1s.).—Editor, *B. J. T.*

Therapeutic). It is hoped that periodically gatherings will meet in Switzerland under this designation.

Thanks to the tenacity of Professor Rosselet and to the activity of the Swiss Organizing Committee all obstacles were overcome, and our vow made at Ghent was brought to a splendid fulfilment. The 350 delegates who responded to the general invitation proved that a conference devoted solely to a study of the subject of Light will always be justified. The originality of the idea lay in the fact that the medical application of light was not to be separated from its scientific basis, and that for the first time biologists and doctors, scientists and meteorologists, were invited to meet and collaborate.

The programme of the Conference included no less than seventeen reports and numerous communications, not to mention many sumptuous receptions and delightful excursions. The programme no doubt was somewhat over-weighted, but it was inspired by the desire of the organizers to prove that their experiment was justified, and also to mark out as it were the boundaries of their domain for future exploration.

The opening meeting took place on September 10 at the Aula of the University of Lausanne. The greetings of the Federal Council were presented by Dr. Carrière, and were followed by a very beautiful address by the Rev. T. Chamoral on the mission of the scientist. Professor Rosselet then explained the origin and the aims of the Conference. The suggestion made by him that an International Light Association should be formed was listened to with sympathy, and resulted in the formation of an International Light Committee, which was commissioned to convene once in at least every three years a conference similar to the one held at Lausanne. We can only give here a very brief summary of the many activities of the days which followed.

From the point of view of *Physics* we can only mention the highly scientific work of Professors Dorno of Davos, Fabry of Paris, V. Henri of Zurich, and the English report of Professor Leonard Hill of London, devoted specially to the measurement of the solar ultra-violet rays.

From the *Biological* point of view the lecture by Dr. G. Bohn of Paris, on vital equilibriums and their seasonal effects, was much appreciated. The important question of pigmentation was the subject of a report by Professor Blochs of Zurich, and the question of photosensitiveness was treated in a masterly way by Professor Hausmann of Vienna and Professor Jausion of Paris.

Fuller reference may be made to the reports dealing with the *Therapeutic* side of the question. That of Dr. Hess of New York on "Irradiated Foods and Sterols" aroused the greatest interest among the members of the Congress. Activated ergosterol, 100,000 times stronger than cod-liver oil, has for some years taken the place of the

THE FIRST INTERNATIONAL CONFERENCE ON LIGHT.

A general group of the members taken at the University of Lausanne, Switzerland, September 10, 1928.

latter in the treatment of tetanus and rickets. The good results obtained allow the author to foresee the possibility of one day preparing substances capable of being substituted for physical agents.

Dr. Bernhard of St. Moritz, initiator, and thus doyen, of heliotherapy, was given a warm ovation by the audience. His lecture on "The Climatic Treatment of Surgical Tuberculosis and other Surgical Affections" summed up the experience of forty-two years crowned by brilliant results.

The report of Professor Axel Bohn of Copenhagen summarized the methods of "the treatment of tuberculosis of the skin by local phototherapy combined with general sun-baths." The addition of general sun-baths has certainly improved the statistics of local phototherapy, and the percentage of cures now reaches 85 per cent. in the most frequent form of tuberculosis of the skin—namely, common lupus.

A final report by Dr. P. Roussel of Lamotte-Beuvron gave details of the indications for heliotherapy in pleuro-pulmonary tuberculosis. The sun-cure constitutes in this domain a valuable auxiliary to the fresh-air cure, and appears above all as a remedy of the soil. The indications will be based much less on the anatomical stage of the malady than on its torpid and evolutionary character. Heliotherapy successfully completes treatment where an artificial pneumothorax has been carried out, and also gives good results in laryngeal tuberculosis. Heliotherapy, moreover, acts as a prophylactic agent during the stage of latent infection; here it acts with the greatest chance of success. The discussion which followed, and in which Drs. Jaquerod, Hervé, and Biancani participated, together with the views expressed in several communications, brought out still further the full interests of the question.

September 13, the last day of the Conference, was a Rollier's day. It is twenty-five years since Dr. Rollier, assistant to Professor Kocher of Berne, gave up a brilliant career as a surgeon to come to Leysin in order to look after a dearly-loved fiancée, who afterwards became the finest collaborator in his work. He installed himself in a modest Alpine châlet—"Le Châlet"—which is still to be visited as a centre of beneficent work. It was a little clinic the fame of which was soon to spread far beyond the frontiers of Switzerland.

To Rollier belongs the credit of establishing on a scientific basis the treatment of general tuberculous infection by general heliotherapy: his technique is now universally known and adopted. Under Rollier's influence the knife gradually gave place to the employment of such natural agents as air and light in the treatment of osteo-articular lesions. The sun-cure, in conjunction with a carefully thought-out orthopædic system, works marvels in cases where the old surgical

methods often prove powerless. But the force which above all constitutes the greatness of Rollier's work is the high ideal which inspires him, the humanitarian and medico-sociological spirit which animates him in all his endeavours. The saving of childhood through the school-in-the-sun, the development of the morale of the adult by the work-cure in the sanatorium today and tomorrow at the factory clinic, thus enabling indigent patients to work for their living and avoid all danger of relapse, are noble experiments which compel universal admiration. It was the man as well as his work which the 200 members of the Conference went up to Leysin to celebrate. A thunder of

DR. AUGUSTE ROLLIER, OF LEYSIN.
The new Honorary Professor in the University of Lausanne, Switzerland.

applause broke out when Dr. A. Beclere addressed him as "Minister Plenipotentiary of the Sun!" When Professor Rosselet followed and presented Rollier in the name of the State Council of Vaud with the Diploma of Professor (*honoris causa*) of the University of Lausanne the applause broke out anew.

In the communications which were presented there were tributes from Drs. C. W. Saleeby of London, Armand-Delille of Paris, Ledent of Liège, and many others, all of which were enthusiastically received.

Among the reports read was one from Dr. Saleeby entitled "From Heliotherapy to Heliohygiene." The speaker, who has made himself for the last thirty years the national apostle of the sun-cure, described the progress of solar hygiene in Great Britain; the development, too

slow for his liking, of the school-in-the-sun and the open-air school, and the good results which have followed the formation, in 1924, of the "Sunlight League" in Great Britain.

The day ended with a lecture by the Master himself. Dr. Rollier dealt with "Heliotherapy of Tuberculosis (so-called Surgical): Its Rôle—Therapeutic, Preventive, and Social." After having recalled how from having been a keen operative surgeon he had become a convinced conservative adviser as regards external tuberculosis, he proceeded to give a general description of guiding principles and the lessons of his twenty-five years of experience at Leysin. "It is the whole of the spectrum which must be applied to the whole of the teguments" he urged, for the skin plays a part of prime importance in the general action of heliotherapy, which in its local action is analgesic, bactericidal, and resolutive. The work-cure, solar posology, and orthopædic technique were then passed in review. Fine lantern slides illustrated the indications for, and the results of, heliotherapy in so-called "surgical tuberculosis," which no longer remains in the domain of the surgeon except cases like renal tuberculosis, for which lesion the lecturer remains a firm believer in intervention. "Prevention is better than cure," and Rollier insisted very rightly on the preventive power of heliotherapy for the child and on the magnificent social rôle it plays. "Heliotherapy no longer gives back to society invalids living at society's expense, but individuals fit to take their place in normal life." A tremendous ovation was accorded the new professor at the end of his fine lecture, which brought to a close, in an atmosphere charged with emotion and enthusiasm, the First International Light Conference.

THE 1928 CONFERENCE OF THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

By SIDNEY G. PEILL,

M.B., CH.B.,

Assistant Medical Commissioner to the National Association for the Prevention of Tuberculosis.

The fourteenth annual conference of the National Association for the Prevention of Tuberculosis was held in the British Medical Association House on October 15 and 16, and was attended by over 400 delegates from all parts of the country, and by many representatives of the Canadian Association. Sir Arthur Stanley presided.

The first day of the conference was devoted to the subject of

"Tuberculosis amongst Primitive Peoples," and the opening paper was read by Dr. R. G. Ferguson on "Tuberculosis among the Indians of the Great Canadian Plains." The paper, which was profusely illustrated by charts and statistical tables, was a close study of a great epidemic of tuberculosis amongst the Indian tribes, which began in 1884. The acute phase lasted about two decades, but it has not yet entirely subsided. Falling upon practically virgin soil the epidemic presented several features of peculiar interest. The human type of bacillus was responsible, and every form of the disease was found. Adenitis affected over 30 per cent. of the population, but now only 3 per cent. present this form. Pulmonary tuberculosis was responsible for most of the deaths. The maximum fatal susceptibility was from one to five years of age, but it has now shifted to ten to fifteen years. In three generations half the families have died out, 31 per cent. of the deaths amongst these being due to tuberculosis, whilst among the surviving families 19 per cent. of the deaths were due to this cause. Resistance to tuberculosis therefore goes together with resistance to disease generally. The survivors are biologically strong. The greatest variations in susceptibility were individual rather than family. Specific, not environmental factors, played the determining part in survival, but the resistant type responds well to improved environment. The chief predisposing cause was acute infectious disease. During the first two decades the prevailing type was acute. Now, out of fifteen cases in the third generation eleven were of the resistant chronic type, and four were non-resistant. There has been no loss of infectiveness—90 per cent. of school children now react to tuberculin. Neither has there been any diminution in the virulence of the germ. The resistance produced through one generation is limited. The tuberculosis death-rate is still twenty times as great as that amongst the surrounding white population. Infusion of white blood by crossing has conferred increased resistance. Besides the elimination of the weak and sensitization of the soil, improved living conditions have contributed to the raising of resistance. There was a mortality of 14 per cent. in the demonstration colony, as compared with 21 per cent. on the average reservation.

Professor Lyle Cummins, who attached the greatest importance to Dr. Ferguson's observations, supported them by his own observations in Africa. In non-tuberculized races the disease assumes an acute and spreading form, but as the race becomes tuberculized, the chronic, localized type of tuberculosis tends to prevail. Professor Lyle Cummins emphasized the value of the preventive measures taken by the authorities in the gold mines in South Africa, strongly urging that similar precautions should accompany all industrial developments amongst primitive peoples.

The subject for the second day of the conference was "The

Principles underlying a Scheme of Anti-Tuberculosis Measures in Any Country." The opening paper was read by Professor Sir Robert Philip, who emphasized six fundamental features of the problem—namely: (1) The Unity and (2) the Infectivity of Tuberculosis; (3) the Universality of Infection; (4) the Contraction of Infection in Childhood; (5) the Continuity of Infection through Life; (6) the Influence of Environment. (1) The recognition, in the beginning of last century, of the anatomical tubercle, constitutes the basis of all subsequent knowledge of tuberculosis. (2) The discovery of the tubercle bacillus having proved the infective nature of the disease, tuberculosis must be dealt with on the broad lines which have applied effectively to other infections. (3) Tuberculosis being almost universally distributed, the earliest traces of infection should be sought for and registered. Beyond the discovery and treatment of pronounced cases, the supreme value of the tuberculosis dispensary lay in the incessant promulgation of the principles of healthy living—the practical re-creation of the ordinary dwelling on sanatorium lines. (4) Preventive measures must be directed towards the infant. (5) While the individual once infected is probably immune to fresh infection, effects following the first infection may emerge at any time. If the significance of early infection were more generally recognized most of the grosser manifestations of tuberculosis would disappear in the course of a generation. (6) The supreme efficacy of physiological methods in raising the standard of resistance is acknowledged, but the lesson of the sanatorium has not been sufficiently applied in the preventive sphere. Schools and nurseries should all be run on sanatorium principles. Our present line of policy lies in the enlightenment of the public regarding the broad facts of tuberculosis, and training the doctor to watch scientifically for the advent of infection. In the last quarter of a century the mortality from pulmonary tuberculosis in London has decreased by 45 per cent.

The second paper was read by Dr. G. Lissant Cox, Central Tuberculosis Officer for Lancashire. This paper was confined to the consideration of practical points in connection with (1) The Dispensary Unit, including Notification; (2) The Institutional Unit; (3) After-Care and Education of the People. (1) The tuberculosis dispensary is the conning-tower of the battleship, and the tuberculosis officer is the C.O. If he is incompetent the whole scheme must fail. He should be a full-time specialist with ample equipment. It is therefore necessary for the dispensary district to be large enough to provide the requisite salary and equipment to attract good men and keep them occupied. The population should be not less than 250,000. The T.O. should have beds at his disposal and two assistants. To have only two specialists for each county would preclude the average patient from obtaining specialist advice.

In Lancashire 83 per cent. of the cases come to the T.O. before notification, yet the early cases still fail to come under observation. For this the family doctor is not to blame. By a gradual education of the people the difficulty would be removed. The only quick remedy would be a periodic health examination of the whole population. (2) The Institutional Unit. In addition to the requirements of the Astor report, one bed per 24,000 of the population is required for pulmonary cases in children, and one per 10,000 for non-pulmonary. The frequency of relapse is mainly due to the lateness of the cases which come under sanatorium treatment. To reduce infection more accommodation is required for advanced cases. There should be a hospital connected with each dispensary. Large institutions are not economical or efficient. (3) After-Care and Education. All tuberculosis schemes require after-care, and every efficient scheme educates the people. Education in hygiene is the only non-controversial part of the anti-tuberculosis campaign. Do not let the tuberculosis service be faint-hearted. In Sheffield the tuberculosis death-rate has diminished by one-half in the last ten years. Given the means this terrible scourge can be, and will be, conquered.

The third paper was contributed by Dr. J. H. Holbrook of Hamilton, Canada. During the decade 1900-1910 the tuberculosis death-rate was exceptionally high (126 per 100,000.) Last year it was lower than that of any other city on the American continent with a population of 100,000 or over. It was 49·5. That for the whole of Canada was 81·7. The Hamilton Sanatorium was established in 1905, the first local sanatorium in Canada. The proximity of the sanatorium to the city made it easier to persuade patients to come in, and easier to develop local interest and support. Maintenance grants are available for indigent patients. Patients are kept in the sanatorium as long as treatment is indicated. In this way great wastage from relapse is avoided. The grants make it easier to collect open cases, and this reduces infection in the city. As the result of a visit by Sir Robert Philip in 1908 a tuberculosis dispensary was started in the city.

It is found best to carry out "after-care" in the sanatorium itself. The older patients are given vocational training, but in the case of the younger patients this is supplemented by academic instruction. They are brought up to matriculation standard in all subjects except physics and chemistry. Radio and microphone are found most useful in education. Stenography, typewriting, and commercial art are eagerly studied by the younger convalescents. The sanatorium is therefore now a place to which the early case is anxious to gain admittance as soon as possible, and it stands correspondingly high in the estimation of the outside public, who yield it ungrudging support.

ASSOCIATIONS AND INSTITUTIONS.

THE "SANATORIUM UNIVERSITAIRE" OF LEYSIN, SWITZERLAND.[1]

By LOUIS C. VAUTHIER,
M.D. (GENEVA).
Resident Medical Director.

THE treatment of tuberculosis is a perennial subject of discussion, but, despite all attacks, the classical treatment in the sanatorium continues to be given in the majority of cases, and certainly is responsible for an overwhelming proportion of the cures effected. In a disease so obstinate and so slow of issue as tuberculosis it is often a combination of "imponderables" that makes, in the long run, the difference between cure and failure.

The "Sanatorium Universitaire" is interesting precisely because it embodies peculiarities and improvements of this nature. In grouping together patients of more or less the same age, culture, and pursuits, it obviates the two opposite evils that beset so many tuberculous subjects in ordinary clinics: helpless loneliness on the one hand, and the deadening weight of unwanted society on the other. A mixture of freedom and association which we generally think of as peculiar to a university can be reproduced with advantage in the sanatorium. The patients provide their own social life, and just as much of it as they want within such limits as their treatment prescribes. The atmosphere is sufficiently academic to encourage the student to keep in touch with his studies. As diagnosis gets more efficient, treatment tends to become longer, but the resulting cure is usually more lasting. It therefore becomes very important to restore to society at the end of the treatment, not merely a healthy individual, but a good social unit. The student must not have become shy of the world and its responsibilities, and his career must still appeal to him. Lastly, a measure of discipline is necessary to ensure the essentials of treatment being properly performed.

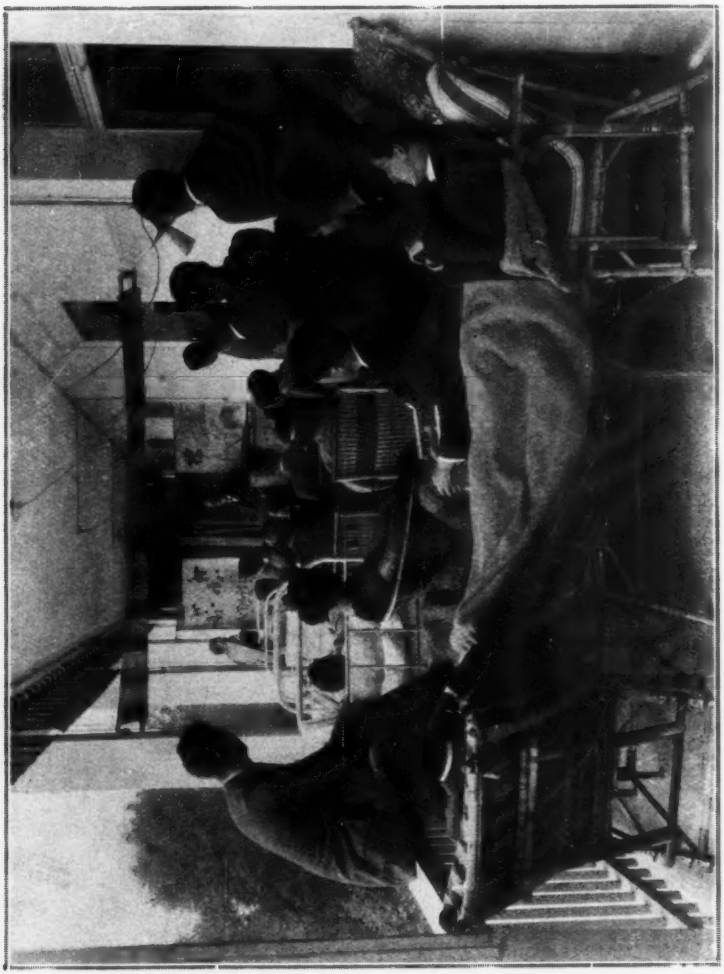
The "Sanatorium Universitaire" has more than justified all this theory in its six years of practical service. It was opened on October 1, 1922, as the joint foundation of the Swiss universities and the technical high school. The project that its founder had always cherished, of making it a thoroughly international centre, was unrealizable in the days of unstable exchanges and international unsettlement. But, from the beginning, as well as sheltering students of the Swiss universities without distinction of nationality, it was provided that the alumni of foreign universities should be welcomed as far as place permitted. As the sanatorium becomes more widely known, more and more profit by this gracious hospitality of the Swiss universities. Already representa-

[1] The English translation of Dr. Vauthier's interesting communication has been kindly prepared by Mr. Douglas Chandler.

THE "SANATORIUM UNIVERSITAIRE" AT LEYSIN: NORTH SIDE.

tives of practically every European nationality, including four English, and numerous others, have been among our residents.

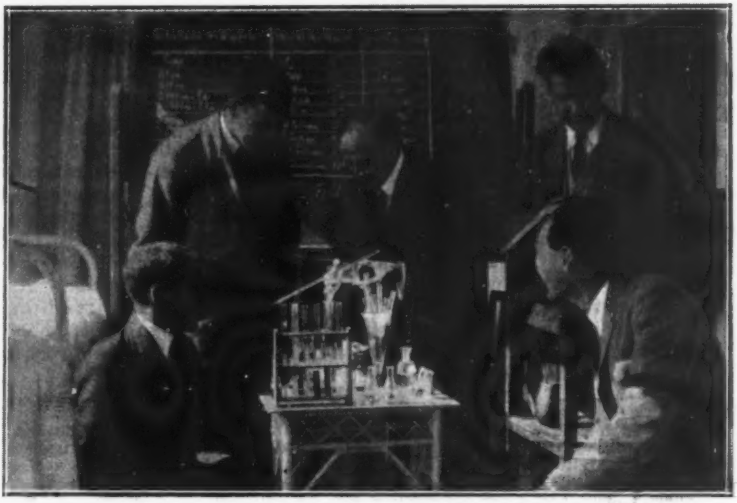
The finances of the sanatorium are based on a scheme of universal



THE "SANATORIUM UNIVERSITAIRE" AT LEYSIN.
An open-air class: Professor Fischer of Berne lecturing on Botany.

insurance of Swiss students and professors. The funds so provided enable the inclusive charge to patients to be as low as 6.50 Sw. fr. per diem, or about 36s. a week. The charge really is inclusive, comprising all treatment, medicine, attendance, X-rays, and so on. So that, even for foreigners, who pay 12 fr. a day, it is actually below cost. The

THE "SANATORIUM UNIVERSITAIRE" AT LEYSIN.
General view, showing open-air galleries on south side.



THE "SANATORIUM UNIVERSITAIRE" AT LEYSIN.
Dr. Vauthier, Director of the Sanatorium, giving instruction to students.

THE "SANATORIUM UNIVERSITAIRE" AT LEYSIN.
An open-air class: Professor Fischer of Berne lecturing on Botany.

sanatorium, enlarged and perfected last year, is well equipped with all that modern science requires, and is well placed, enjoying the best uninterrupted view in Leysin over the superb Rhone Valley. The methods of Dr. A. Rollier, now justly famous, are employed for the treatment of surgical tuberculosis, and pulmonary cases receive detailed care on the most approved modern lines.

And the university side? There is no misguided attempt to run a "university in the mountains," but here again attention to individual cases is the rule. Some can keep up their work, and go down to their university to take their examinations, for the Swiss universities will count the terms spent in the sanatorium. Others belong to faculties not so fortunately placed, and must content themselves with concentrating on the theoretical side of their work, or with learning foreign languages. Handwork is not unknown, and we are shortly to be installed for bookbinding and light woodwork and metalwork. Medical students may get clinical practice in this important health station of Leysin. The library forms the essential requisite for study; it is growing and proving ever more useful, and in addition we have the use of the Swiss university libraries, and of those of the "Société de la Station Climatérique" and "Société des Médecins" of Leysin. Wireless is installed at every bedside and on each balcony, and serves also to transmit lectures from the hall downstairs A cinema-projector, microscopes, and scientific apparatus are in constant use. More than one hundred and sixty journals and reviews in all languages are received gratuitously, and numerous professors come from time to time to pass several days here and give lectures and individual help.

But, rightly regarded, our present university sanatorium is in the nature of a first experiment. The International University Sanatorium, for which the site is offered by the municipality, and the plans have been elaborated by M. Georges Epitaux, of Lausanne. is to be the medical, surgical, and academic centre of Leysin. Voted by the international student organizations, who are vigorously working for it in their national units, the project has received the patronage of the Swiss Federal Government, and will shortly be put before the other Governments through diplomatic channels. Anyone – Government, university, student organization, or individual—may for £1,000 install a bed and have a vote on the governing board. Of the two hundred proposed beds many are already promised. We hope it will be our pleasure to see our English friends sharing in this foundation, the advantages of which we commend to their serious consideration. As director of the present Swiss sanatorium, and general secretary of the foundation committee of the future international foundation, I should be pleased to put further information on either subject at the disposal of readers of this JOURNAL.[1]

[1] We have visited the Swiss University Sanatorium at Leysin and can warmly commend its aims and work to the consideration of all interested in the physical welfare and happiness of students stricken with tuberculosis. Further particulars will be found in the recently issued new edition of *Projet d'un Sanatorium Universitaire International à Leysin*, by Frank Abauzit, Privat-docent in the University of Geneva. This and other information can be obtained on application to Dr. Vauthier, and from Miss M. L. Yeo, National Union of Students, 3, Endsleigh Gardens, Euston, W.C .1.—EDITOR *B. J. T.*

NOTICES OF BOOKS.

PULMONARY CAVITIES.

Dr. Jaquerod coins a new expression, "Speleologie pulmonaire," for the science of cavities in the chest.[1] He demonstrates the necessity for careful study of cavities for the aid they can give in diagnosis and for the value of the changes they undergo in prognosis. For convenience they are grouped into three degrees, in any of which healing may occur accompanied by effacement, obstruction, or persistence of the actual cavity. Too much has been based on the examination of post-mortem specimens, but with the help of radiography, properly interpreted, it is possible to observe the beginning, the progress, and the healing of gross damage to the lung and thereby to gain much clinical assistance. The annular shadow, without accompanying physical signs, which has led to so much controversy, is discovered at length, and whilst the author regards it as usually associated with *lesion cavitaire*, such lesion is not necessarily the classical conception of a lung cavity. The sudden appearance of such ring shadows is explained by elastic contraction of lung tissue surrounding what may be a small rupture. There is possible confusion with limited pneumothorax, with hernia of the mediastinum, and pleural lines. False images due to superimposed shadows may be dissipated by moving the tube and exposing another film; stereoscopy will sometimes help in the diagnosis. A short note on treatment is inserted, and there is a list of references. The subject is treated in a concise and masterly manner that cannot but merit the highest praise. The greater part of the volume is composed of plates, each containing several illustrations accompanied by descriptive notes. The reductions are beautifully reproduced, and not one of them fails to demonstrate the point for which it is included. It is a pleasure to handle this book, and to read it. It can be heartily recommended to any student of pulmonary tuberculosis.

J. E. A. Lynham, M.D., D.M.R.E.

LIPIODOL AS A DIAGNOSTIC AND THERAPEUTIC AGENT.

One of the greatest diagnostic advances of recent times is the employment of lipiodol. For this we are indebted to Sicard and Forestier.[2] Their unique experience of its use in various regions of the body is incorporated in an excellent volume issued by the well-known

[1] "Étude Clinique et Radiologique des Cavernes Tuberculeuses," by Dr. Jacquerod, of Leysin. Paris: Masson et Cie, Libraires de L'Académie da Médecine, 120, Boulevard Saint-German. Pp. 14, with 40 plates and a bibliography.

[2] "Diagnostique et Thérapeutique par le Lipiodol: Clinique et Radiologie." By J. A. Sicard, Professeur à la Faculté de Médecine de Paris, Médecin d'Hôpital Necker, et J. Forestier, d'Aix-les-Bains, Ancien-Interne des Hôpitaux de Paris. Pp. 372, with 49 illustrations. Paris: Masson et Cie, 120, Boulevard Saint-Germain. 1928. Price 50 frs.

Paris medical publishing house of Masson. It is effectively printed and well illustrated, and there is an exhaustive bibliography. There are also numerous references throughout the text to the work of other writers in various countries of the world. The first part of the volume is devoted to the diagnostic possibilities of lipiodol injected into the subarachnoid and epidural spaces; the next to its use in thoracic disease. Following this are descriptions of its employment in connection with the genital and urinary tracts, in the exploration of bloodvessels, in defining abscesses and fistulæ, in investigating nasal sinuses, lachrymal sacs, bones (into which the oil may be introduced by a small trephination hole), the various articulations, the peripheral nerves, serous cavities, the stomach (by means of capsules, as a test of its secretory activity), and even the salivary glands. The last part of the volume deals with the therapeutic uses of lipiodol. Of special interest to the readers of this JOURNAL will be the authors' views on its value in the treatment of thoracic disease. They say that it is the general experience of all chest specialists that, in bronchiectasis, injections of Lipiodol deodorize and diminish expectoration, that in many cases the general condition of the patient is improved. They claim that it is of value in cases of lung abscess and in thoracic fistulæ; and that it would be reasonable to employ it therapeutically in chronic bronchitis, emphysema, and in bronchial asthma. Its further trial in cold abscesses and tuberculous affections of the serous membranes is recommended. The time was ripe for this complete and authoritative treatise on Lipiodol, and to this admirable and valuable work by the originators of the method we extend a most enthusiastic welcome.

F. G. CHANDLER, M.D., F.R.C.P.

TUBERCULIN-THERAPY.

Dr. Gunter in his new book on tuberculin[1] declares himself an obvious enthusiast for the use of tuberculin, more especially in diagnosis, but also in the treatment of selected cases of tuberculosis of the lungs and of "tubercular asthma."[1] The author is careful to say that to treat people with tuberculin on a positive reaction alone is against the dictates of common sense. He fully recognizes that other evidence of the disease has to be determined, and lays stress on the value of X-ray films, realizing at the same time the frequent occurrence of root and other shadows in the apparently healthy. In this connection, one of the best-balanced chapters in the book is contributed by Dr. Hernaman-Johnson, who, one is pleased to note, makes the clear statement that "as radiology deals with signs, not symptoms, the first stages of the disease must inevitably elude X-ray examination." This frank expression of expert opinion might be taken to heart with advantage by many practitioners, especially the more recently qualified. Possibly owing to the fact that the book is intended for lay readers as well as for the profession, the details of the illustrative cases are rather scanty. As the author himself says, he purposely did not select cases that reacted especially well

[1] "Tuberculin in Practice: Its Value in the Treatment of Early Tuberculosis and Asthma," by F. E. Gunter, D.S.O., M.C., Lt.-Col. R.A.M.C. (Ret.). Physician to Margaret Street Hospital for Consumption and Diseases of the Chest. Pp. ix + 102. London: The Gregg Publishing Co., Ltd., Kern House, 36–38, Kingsway, W.C. 2. 1928. Price 7s. 6d.

to tuberculin, but aimed at emphasizing the importance of early treatment before the lungs are seriously affected. These are the cases which in the author's experience have responded most favourably to tuberculin, where, indeed, it appears to "act like a charm." The author is apparently acquainted with the views of certain writers who regard infection by the tubercle bacillus and the *Spirochæta pallida* as practically analogous, and as a consequence look upon most of the cases of pulmonary tuberculosis as seen in ordinary practice as being in the tertiary stage of the disease. He is also obviously well aware of much of the criticism that has been levelled against tuberculin, and admits that it may be harmful if used carelessly. For the inexperienced practitioner and in very sensitive patients the author recommends tuberculin liniment. We are still far from a complete knowledge of the action of tuberculin, and there is as yet no completely fool-proof guide to its administration. Dr. Gunter favours the intensive method of Dr. Camac Wilkinson, but states that "no definite rules as to dosage can be laid down. Everything depends on how the patient stands the injections." The author is, however, able to give useful guiding principles. If his book helps towards a concerted effort for the elucidation of the many problems connected with tuberculin, Dr. Gunter will doubtless feel that his labours have been worth while. It is to be hoped, however, that any such research will be conducted in an impersonal, calm, judicial, and scientific spirit, not always in evidence in this country in the past when the value, or otherwise, of tuberculin has been under discussion.

WILLIAM STOBIE, M.D., M.R.C.P.

TUBERCULIN TEST FOR CATTLE.

A report by the Tuberculin Committee of the Medical Research Council has been recently published dealing with the double intradermal tuberculin test, devised in 1925 to replace the subcutaneous test which has hitherto been in general use.[1] The test involves two injections of concentrated tuberculin—a "sensitizing" dose and a "reacting" dose—given at certain specified intervals, and a diagnosis is arrived at from an examination of the swelling resulting therefrom, size and character both being taken into account. In 1927 the committee appointed two of its members, Professor J. B. Buxton and Dr. A. Salusbury MacNalty, to collect the views and experiences of veterinary surgeons who had made use of the test, and with this object in view a questionnaire, previously sanctioned by the committee, was circulated among one hundred such veterinary surgeons, of whom seventy-seven replied in detail. The report is mainly devoted to a critical analysis of these replies, and the general conclusion appears to be that the vast majority of veterinary surgeons find it more reliable than the subcutaneous test. It is more easy of application, and does not interfere with the daily routine to any appreciable extent. A further advantage claimed is that young beasts can be tested by the use of this test, a process which is impossible when the subcutaneous test is used. "A large majority of the observers consider the double intradermal

[1] "The Intradermal Tuberculin Test in Cattle," by Professor J. Basil Buxton and Dr. A. Salusbury MacNalty. Medical Research Council Special Report Series, No. 122. London: H.M. Stationery Office. 1928. Price 1s. 6d. net.

test to be a reliable one, and that its reliability exceeds that of the subcutaneous test. Some of the replies are couched in enthusiastic terms, whilst others qualify their favourable opinion by expressing a desire for more post-mortem evidence in the animals tested by them." The anomalous results which have been obtained by the use of the ophthalmic test have been a source of much criticism in the past, and the authors conclude their report by saying: "We are in favour of the discontinuance of the use of the ophthalmic test in conjunction with the double intradermal test for the reasons previously set forth in this review. We are not in favour of requiring the intra- or subpalpebral test to be substituted for the ophthalmic test. Before any conclusions are drawn as to the efficacy of any new test that is applied for the diagnosis of tuberculosis, extensive experiments carefully controlled by post-mortem examination should be made, as was done by the Tuberculin Committee in regard to the double intradermal test. We suggest that the application of all these subsidiary tuberculin tests should be left to the discretion of the practitioner concerned." There are two appendices to the report. No. 1 deals with the technique which is advised for the proper carrying out of the test, and will prove of great value to the practitioner using the test for the first time. No. 2 is "A Note on the Potency of Tuberculin." The report is an extremely valuable one, especially to those engaged in stock-rearing or tuberculosis eradication, for it marks a further step forward in the difficult but important subject of early diagnosis.

G. W. DUNKIN.

LOW BLOOD PRESSURE.

Every student of the problems connected with variations of the normal blood pressure knows that there are certain conditions in which the blood pressure is raised temporarily and for short periods or permanently. The former state may be merely of a physiological nature, the latter is pathological. The clinical sign of hyperpiesis or raised blood pressure may be the only one which can be detected in the pathological state described by Sir Clifford Allbut as Hyperpiesia, the constant organic change underlying Hyperpiesia in cardiac hypertrophy; but both the hyperpiesis and the cardiac hypertrophy owe their origin to a cause which at present can only be guessed at—it has not yet been clearly demonstrated. Notwithstanding this fundamental defect in knowledge, Hyperpiesia as a pathological state has come to stay, and hyperpiesis is the most constant and permanent sign of this state. The converse problem needed study. Is there a pathological state in which low blood pressure is the most constant and permanent sign? Dr. Halls Dally has essayed to answer the question.[1] Addison has to a certain extent forestalled him, for he found a disease which we now know is associated with hypopiesis; but Addison went further than Sir Clifford Allbutt in that he was able to refer the symptoms to disorder of a particular organ: lack of suprarenal secretion leads to low arterial pressure. The disease is not, however, called Hypopiesia, which would express merely the constant state of hypo-

[1] "Low Blood Pressure: Its Causes and Significance." By J. F. Halls Dally, M.A., M.D., M.R.C.P., Physician to the Mount Vernon Hospital. Pp. 257, London: William Heinemann. 1928. Price 15s.

piesis; it has been rightly spoken of as Addison's disease, which depends upon dysfunction of a known gland, and this dysfunction is brought about by various pathological causes acting on the gland. Dr. Halls Dally has made a generalization (p. 59) "that low arterial pressure, whether congenital or acquired, temporary or permanent, is an expression of low vitality." He maintains that hypopiesis is not a physiological state, so that at once hypopiesis is shown to be not merely the opposite of hyperpiesis when it is an expression of excitement. It is always pathological, and is due to "nutritional changes in the body cells and tissues, and endocrine dysfunction, whether originating as a part of endogenous or exogenous toxæmia or from other causes, probably constitutes the largest group of low arterial pressure." Here again hyperpiesis and hypopiesis are not obverse and reverse of the same coin, because no one has shown that Hyperpiesia is due to dysfunction of endocrine glands; it can only be said that Hyperpiesia is due to exogenous toxæmia, and it is well known that hypopiesis is also due to exogenous poisons: in the former case the cardio-vascular system is the point of attack, and excess of action is provoked; in the latter case deficient function of the cardio-vascular system is the basis of disorder. Again, there are very few exogenous poisons which can produce an excess of vascular constriction and cardiac over-function, so that the use of the term "Hyperpiesia" is excusable, though of course it is far from being satisfactory. But it is quite otherwise with diminished vaso-tonus and diminished cardiac action; the known causes of the latter disturbance are legion—all the pathogenic organisms known are depressor. There can be no hypopiesia, for there are many distinct forms of hypopiesis. The result is that Dr. Halls Dally has ranged through the whole of medicine, and has grouped and co-ordinated the diseases which produce hypopiesis. From p. 209 onwards will be found a description of how best to combat the various forms of hypopiesis, not only by treatment of the causes which, alas! in the cases owning a bacterial ætiology are so often beyond reach, but by treatment of the hypopiesis whatever is its cause, and by treatment of those symptoms dependent upon hypopiesis

H. Batty Shaw, M.D., F.R.C.P.

ACTINO-THERAPY.

Dr. Eleanor H. Russell and Dr. W. Kerr Russell are to be congratulated on the third edition of their excellent work on ultra-violet radiation and the practice of actino-therapy.[1] Comparison of this volume with the previous ones shows that it has been largely rewritten, and that it contains much new matter. This book represents the first real attempt that has been made in this country to produce a useful and comprehensive textbook on a comparatively new and very important subject. During the last five or six years many books and booklets have been written on actino-therapy, but few show that irreproachable

[1] "Ultra-Violet Radiation and Actino-therapy." By Eleanor H. Russell, M.D., B.S., Hon. Physician Sun-Ray Clinic, Newcastle-on-Tyne; and W. Kerr Russell, M.D., B.S., Medical Director Sun-Ray Clinic, Newcastle-on-Tyne. With Foreword by Sir Oliver Lodge, F.R.S., D.Sc., LL.D., and Sydney Walton, C.B.E., M.A., B.Lit. Third Edition. Pp. 648, with 259 figs. Edinburgh: E. and S. Livingstone, 16 and 17, Teviot Place. 1928. Price 21s.

competence which should mark a practitioner's textbook. On the contrary, most of the volumes hitherto published have been of a hasty and improvised nature. The Russells' work, however, is a careful and conscientious work, the outcome of many years of study of the physics of light, and of the different sources of ultra-violet radiation. The authors have taken immense pains with their book, and have travelled all over Europe in order to get in touch with the distinguished Continental workers in the application of light to medicine, and to inquire into their methods and the theories underlying their work. The publishers, Messrs. Livingstone of Edinburgh, are also to be heartily congratulated on the excellent printing, the first-rate illustrations, and the general get-up of a very attractive volume The chapters on apparatus are clear and comprehensive, and should offer useful guidance to the general practitioner who wishes to equip himself for this class of work. The chapter on the chemical and physical properties of ultra-violet rays, and that on the biological effects of light, provide a clear account of the most recent work on these subjects. The chapter on technique is useful and informing to the inexperienced, who need fear no ill or accident with this admirable chapter to guide them. Chapters on treatment follow. That on tuberculosis is extremely well illustrated, and gives the latest and most generally accepted information on the adjuvant treatment by light of cases of surgical tuberculosis. In the concluding chapters the treatment of rickets and nutritional diseases, diseases of the blood, disorders of endocrine glands, the cardio-vascular, respiratory, and alimentary systems, are briefly touched on. Also reference is made to the use of actino-therapy in dermatological conditions, and there is a short and useful chapter on light in dental practice. The authors are emphatic in denouncing the quackery that is unfortunately extensively associated in this country with actinotherapy, and very rightly consider that it is almost as dangerous for unqualified people to use ultra-violet radiation as it is for a layman to prescribe drugs or to meddle with surgery. To the beginner in actinotherapy this book may be cordially recommended as a sound and practical guide.

J. A. WILSON, F.R.C.P. (Edin.), D.M.R.E. (Camb.).

Dr. Percy Hall's well-known manual on actinotherapy has now reached its third edition.[1] Although its first issue was as recent as 1924, it at once found favour both in America and in this country. The work is provided with commendatory introductions from Sir Henry Gauvain and Professor Leonard Hill, but it has won its popularity by its real merits, for it provides just that concise, lucid, helpful information and reliable guidance of which those entering on the application of ultra-violet radiations as agents in the prevention and cure of disease stand in need. The proper employment of appliances for the conduct of actinotherapy demands knowledge and skill. Moreover, if the best

[1] "Ultra-Violet Rays in the Treatment and Cure of Disease." By Percy Hall, M.R.C.S., L.R.C.P., Hon. Actinotherapist, Mount Vernon Hospital, etc. With an Introduction by Sir Henry Gauvain, M.A., M.D., M.C., F.R.C.S., Medical Superintendent, Lord Mayor Treloar Cripples' Hospitals, and Leonard E. Hill, M.B., F.R.S., Director, Department of Applied Physiology and Hygiene, National Institute of Medical Research. Third edition. Pp. xviii + 236, with 57 charts and illustrations. London: William Heinemann (Medical Books), Ltd., 20, Bedford Street, W.C. 2. 1927. Price 12s. 6d.

results are to be obtained and accidents avoided instruction from those experienced is essential. Dr. Hall's book certainly provides all that can be expected from the printed word and carefully selected illustrations. The frontispiece presents an admirable chart indicating the range of electro-magnetic waves, and there are also fine reproductions of spectra as given by the various forms of lamps. The descriptions and illustrations of the most important varieties of lamps will be found of service to those about to enter on the study and practice of actinotherapy. The new edition has been in great measure re-written and is considerably enlarged and brought up to date, and now forms a most complete and serviceable guide to the employment of ultra-violet rays in medicine. A special chapter is devoted to the consideration of Actinotherapy in Tuberculosis. Dr. Hall is of opinion that "cases have been badly chosen and the method has been used in a haphazard manner—the common mistake being to give *too large, too many, and too frequent doses.*" And he adds: "Moreover, too often trial is made in advanced cases which are hopeless from the first. These remarks apply equally whether heliotherapy or its artificial substitutes are used." We are glad to see that insistence is laid on the importance of choice of source as well as correct technique and dosage. Dr. Hall seems to prefer the carbon arc lamp as a general rule for use with children, particularly those with tuberculous glands. The view is expressed that diathermy is of great value in pulmonary tuberculosis used in conjunction with actinotherapy. Dr. Hall's work deals with artificial light in the treatment of many diseases and disorders in a way which will be of service to all practitioners of actinotherapy. The book is particularly well illustrated and is most effectively printed on art paper.

Dr. Humphris in 1924 issued his most practical handbook on actinotherapy, and now in 1928 it has reached its fourth edition—a fact which not only indicates the widespread interest taken in the subject, but the serviceable character of the author's work.[1] Dr. Humphris is consulting X-ray physician or phototherapeutic specialist to a number of institutions in and about London, and has intimate knowledge of the needs of medical practitioners who desire to employ artificial sunlight in the treatment of disease. His book is thoroughly practical, and the new edition has undergone careful revision. The author does well in his preface to direct attention to "the almost indiscriminate use of artificial sunlight by those who are insufficiently acquainted with its use, properties, and dangers." It is also pointed out that "one of the errors of omission is to regard artificial sunlight chiefly as a curative agent in the treatment of disease, when perhaps its most important field of greatest usefulness is in the treatment of health, which . . . means the keeping of health and the prevention of disease. Energy—the energy of health—can be absorbed from sunlight, and even in the healthiest there is a constant tendency to lose energy, or to use it up; this energy can, and must, be replaced by sunlight, if the best results are to be obtained in the treatment of health." In the present edition fuller details are given regarding technique and

[1] "Artificial Sunlight and its Therapeutic Uses." By Francis Howard Humphris, M.D., F.R.C.P.E., M.R.C.S., L.R.C.P., etc. Pp. xix + 306, with 28 figs. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1928. Price 10s. 6d.

the important matter of dosage. The chapter on contra-indications has been extended. It is stated that "tuberculin which has been exposed to ultra-violet radiation loses its power to produce intradermic reaction." As regards tuberculosis the following statement appears: "The counsel of perfection for the treatment of tuberculosis, as a rule, whether it manifest itself in lung or gland, in bone or skin, is to send the case to a high altitude for treatment by heliotherapy and this too, *as soon as the discovery of the disease is made*." In italics appear the following words: "It must be premised as an article of faith that every case of tuberculosis should be treated with ultra-violet radiation whether this be derived from the sun or from any artificial source." It is, however, admitted that "in patients suffering from pulmonary tuberculosis ultra-violet radiation must be administered with extreme caution." It is further stated that "the type of pulmonary tuberculosis which is most suitable for treatment by ultra-violet radiation is where the disease is of the localized, single-focus type, especially if there be little or no fever. The cases that do not do so well are those of multiple foci, where there is a definite rise and fall in the temperature and in patients prone to tuberculosis." Dr. Humphris is enthusiastic in his commendation of ultra-violet radiation for all forms of surgical tuberculosis. The book closes with a helpful bibliography and a serviceable glossary. The illustrations are few in number, and might be increased with advantage in the next edition. It should be noted that the volume is one of the Oxford Medical Publications.

CONTINENTAL STUDIES IN TUBERCULOSIS.

Germany and other European countries are showing much activity in the issue of many excellent works dealing with various aspects of tuberculosis. Professor Huebschmann, of Düsseldorf, has written an informing book on the pathological anatomy of tuberculosis.[1] The study of the pathological anatomy of tuberculosis dates from the seventeenth century, for it was not until then that autopsies were frequently made and correlated with the symptoms of disease in life. Franciscus D. Sylvius (A.D. 1614-1672) first recognized tuberculous nodules, and Morgagni in 1700 gave the first pathological description of miliary tuberculosis. Laennec in the early part of the nineteenth century described the naked-eye experiences of pulmonary lesions in tuberculosis, although this pathological work has been overshadowed by his clinical discoveries. In 1840 the microscope reinforced the labours of the anatomist, and through the services of Lebert, Rokitansky, Reinhardt, and Virchow the histological appearances of tuberculosis were made known. Their investigations paved the way to Villemin's classical experiments which established tuberculosis as a specific infection, and the work was crowned by Koch's discovery of the tubercle bacillus. These are the foundations of the pathology of tuberculosis. We turn the many pages of Professor Huebschmann's book and appreciate how mighty a superstructure of knowledge and histological detail has been built upon them. Yet this book is to be regarded only as a partial

[1] "Pathologische Anatomie der Tuberkulose" ["Pathological Anatomy of Tuberculosis"]. By Professor P. Heubschmann, Director of the Pathological Institute of the Medical School in Düsseldorf. Pp. 516, with 108 plates (the greater part coloured). Berlin: Julius Springer, 23, Linkstrasse. 1928. Price Rm. 86; gebundem Rm. 89.

explanation of a vast subject. Originally devised as a textbook, this plan had to be abandoned when the author realized that the histogenesis of tuberculosis was either imperfectly explained or not at all. Accordingly, fresh material was obtained and numerous experiments entered upon. This book, which Professor Heubschmann modestly describes as a rough draft and a programme of the subject, is based essentially upon his own investigations and conclusions. Space does not permit us to criticize the views of the author in detail. We can agree, however, with the main conclusion that the pathogenesis and histogenesis of tuberculosis are closely associated, and that a knowledge of the one is incomplete without that of the other. A word of praise must be given to the coloured plates which so admirably illustrate this comprehensive treatise.

A. S. M.

Dr. Brieger has written an instructive monograph on the institutional care of tuberculous cases.[1] He points out that the work of Robert Koch has now made the fact that tuberculosis is an epidemic disease "a familiar exposition." The secret of success in the treatment of tuberculosis is the adoption of institutional segregation of the patient as with any other form of infectious disease. In this connection, Dr. Brieger cites figures comparing the number of hospital and sanatorium beds with the tuberculosis death-rate in various countries. It must be remembered, however, that tuberculosis is a complex problem; conditions of housing, poverty, and malnutrition with opportunities for massed infection which foster a high death-rate in this disease will still prevail if reliance is only placed on bed-provision for patients. In other words, the campaign against tuberculosis must be waged in the home as well as in the hospital and sanatorium. Dr. Brieger is well acquainted with recent English work, and frequently refers to the results of tuberculosis work in this country. He speaks in high terms of Dr. Varrier-Jones's pioneer work at Papworth. It is gratifying to know that occupational therapy is being made a prominent feature in the work of German sanatoria and hospitals.

A. S. M.

Dr. Hanns Alexander has written a little monograph in which he gives a good account of the various methods employed in arriving at the diagnosis of early pulmonary tuberculosis in the adult.[2] The section on differential diagnosis might have been expanded with advantage, for it is far from exhaustive. The author has paid particular attention to the X-ray findings, and the case-records cited are illustrated by a number of well-reproduced skiagrams. The bibliography relates almost entirely to German writings.

A. S. M.

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[1] "Die Umstellung der Anstalts fürsorge in Tuberkuloseheilstätten und-kranken häusern: Nachfürsorge und Werkstättensiedlungen ["The New Aspect of Institutional Care in Sanatoria and Hospitals for Tuberculosis: After-Care and Industrial Colonies"]. By Primärarzt Dr. Ernst Brieger. Pp. 54, with 4 plates. Tuberkulose-Bibliothek, No. 33. Leipzic: Johann Ambrosius Barth, Salmonstrasse 18B. 1928. Price Rm. 4: Vorzugspreis Rm. 3.20.

[2] "Frühdiagnose der Lungen-Tuberkulose des Erwachsenen" ["The Early Diagnosis of Tuberculosis of the Lungs in the Adult"] By Dr. Hanns Alexander. Medical Superintendent of the Agra Sanatorium (Tessin). Pp. 50, with 3 illustrations in the text and 5 plates. Leipzic: Curt Kabitzsch. 1928.

Reference may here be made to a suggestive monograph on toxins and toxoids provided by Dr. E. Löwenstein, of Vienna.[1] It is a section of Professor Emil Abderhalden's monumental "Handbuch der Biologischen Arbeitsmethoden." This highly technical *arbeit* will chiefly interest the general bacteriologist. It is mainly devoted to a consideration of modern work on toxin and toxoids in diphtheria and other acute infectious maladies. An account is given of the making and testing of tuberculin, with a short description of the two components, the carbohydrate body of H. Zinsser and P. P. Laidlaw, reacting *in vitro*, and the purified tuberculin of F. Seibert and E. R. Long, with its specific toxicity. A. S. M.

Bad Reichenhall in Bavaria has been long celebrated for its compressed-air chambers, devised for the treatment of emphysema. We have received a well-illustrated booklet from the Directorate which gives a full account of the development of this spa and its new buildings.[2] In addition to hydrotherapeutic provision, there is now a large inhalatorium in which those suffering from respiratory affections can be treated.

The Report for the year 1927 of the League against Tuberculosis, St. Paulo, Brazil, presented to the Annual Meeting by the President, Dr. Clemente Ferreira, makes interesting reading.[3] The League has to deal with nearly 4,000 consumptives annually. The pivot of the scheme is the Dispensary "Clemente Ferreira," and residential treatment is given at the St. Luis Sanatorium. Statistical reports are furnished on the results obtained with artificial pneumothorax, sanocrysin, heliotherapy, tuberculin, and serotherapy. A clinical trial is being made of Calmette's B.C.G. vaccine. A. S. M.

A STUDY OF PULMONARY TUBERCULOSIS IN WALES.

Mr. Emrys G. Bowen has prepared a highly suggestive and original report on the Incidence of Pulmonary Tuberculosis in a part of Wales.[4] Mr. Emrys G. Bowen is the first Cecil Prosser Research Scholar in

[1] "Toxine und Toxoide." Handbook der biologischen Arbeitsmethoden. Abt. XIII., Methoden der Immunitätsforschung und der experimentellen Therapie, Tiel 2, Heft 7. Immunitätsforschung. ["Toxins and Toxoids." Handbook of biological methods; Arbeit XIII., Methods of Immunological Investigation and Experimental Therapy, Part 2, Heft 7.] By Ernest Löwenstein, Vienna. Pp. 109. Berlin and Vienna: Urban and Schwarzenberg, Friedrichstrasse 105B. 1928. Price Mk. 6.

[2] "Das Staatlich—Stadtische Kurmittelhaus Bad Reichenhall Erbaut von Architekt Max Lithuan München." Munchen: Kommissionsverlag der Graph. Kunstarstalten F. B. Bruckmann. 1928.

[3] "Relatorio apresentado à Assemblea Geral na Sessão Annual da Maio de 1928." Pelo Dr. Clemente Ferreira, Presidente, 1928. São Paulo: Casa Alpha Ltd., Rua 3 de Wezernbro, 11A. 1928.

[4] "The Incidence of Phthisis in Relation to Race Type and Social Environment in South and West Wales." By Emrys G. Bowen, M.A. With a Foreword by Professor S. Lyle Cummins, C.B., C.M.G., M.D., LL.D. Reprinted from the *Journal of the Royal Anthropological Institute*, Vol. LVIII., July-December, 1928. Pp. 38. London: Royal Anthropological Institute of Great Britain and Ireland, 52, Upper Bedford Place, Russell Square, W.C. 1.

Tuberculosis in the University of Wales. Working under the direction of Professor Lyle Cummins, and with the assistance of Professor Fleure of the Geography Department, Aberystwyth, as well as of Dr. Charles Lloyd, the Tuberculosis Physician in Cardiganshire, he has carried out, during 1926 and 1927, an interesting survey of tuberculosis in the old lead-mining districts of North Cardiganshire—the site of an industry now almost gone, but of which traces still remain—as part of the health problem of the inhabitants. Mr. Bowen's knowledge of the Welsh language and of the Welsh people gave him a clue to a most interesting series of observations, and he was able to co-ordinate the tuberculosis mortality and incidence with racial and cultural factors in a part of Wales which has been but little explored by the epidemiologist. He found curious differences in the age of maximum mortality as between the short, dark, moorland type of Welsh countryfolk living in isolated farms on the hills, and the tall, fair-haired and blue-eyed Anglo-Saxon type which tends to inhabit small villages, often in the neighbourhood of Church and Manor. The former were more susceptible to tuberculosis under their home conditions than the latter; but the Anglo-Saxon type, living the communal life of an agricultural village, appeared to adapt themselves with but little success to industrial conditions in the mining areas on leaving their country surroundings. The short, dark type of Welshman, however, seems to possess a singular power of rapid adaptation to industrial surroundings, and a few generations suffice to make him very resistant under the conditions of life in coal-mining districts. Mr. Bowen followed up his work in North Cardiganshire by a period of study in the Glyncorrwg mining area of West Glamorganshire, and his comparisons between these two geographically and culturally distinct districts are full of interest. As was inevitable in work of this kind, Mr. Bowen has been obliged to work on small groups, which takes away somewhat from the statistical value of his charts, but the lack of numbers is made up for by a thorough local knowledge and by very careful work in which the help of the Registrar-General's records was sought, and kindly granted. The Report is one which all students of tuberculosis should read.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Medicine is based upon physiology, and the wise doctor, be he general practitioner, tuberculosis officer, consultant or adviser in any of the branches of medical science and art, will see to it that his physiological foundations are effectively maintained. There is no better means whereby the medical student and practitioner of today can obtain a lucid, up-to-date, serviceable account of physiological facts and theories than by the study of the volume which bears the names of Professors Halliburton and McDowall.[1] This is the eighteenth edition of a work which first appeared in 1848, prepared by William Senhouse Kirkes,

[1] "Handbook of Physiology." By W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S., Emeritus Professor of Physiology, King's College, London; and R. J. S. McDowall, M.B., D.Sc., F.R.C.P.E., Dean of the Faculty of Medicine and Professor of Physiology, King's College, London. Eighteenth edition. Pp xxiv+902, with 500 illustrations in the text, many of which are coloured, and 3 coloured plates. London: John Murray, 50A, Albemarle Street, W. 1. 1928. Price 18s.

assisted by Mr. (afterwards Sir James) Paget, then Lecturer on Physiology at St. Bartholomew's Hospital. "Kirkes' Physiology" was for long popular as a student's textbook. With the fourth edition, issued in 1860, the name of Mr. Savory (afterwards Sir William) appeared as editor. In 1867, with the sixth edition, Mr. Morant Baker became associate editor. In 1869 the work passed to the present publisher. With the ninth edition in 1876 the work was completely revised under the direction of Dr. Klein. From the tenth to the thirteenth edition, which was issued in 1892, Mr. Morant Baker shared the responsibilities of editorship with his senior demonstrator, Dr. Vincent D. Harris. In 1896 the fifty-four years of association of the work with St. Bartholomew's Hospital was closed, and Professor Halliburton of King's College assumed the editorship. In the last twenty-nine years seventeen editions have been issued, totalling 116,000 copies. The new edition, published in 1928, bears the names of Professors Halliburton and McDowall. It is an impressive and satisfying exposition of present-day physiological knowledge. All students of the tuberculosis problem may be advised to read the book in its entirety, and particularly the section devoted to respiration. There are new accounts of the carriage of carbon dioxide, vitamins, ductless glands, intermediate metabolism, test meals, the control of respiration, and the effect of exercise on respiratory exchanges. Many new diagrams are provided. The book is admirably produced, having been completely revised and reset. A small reduction in the size of the volume has made it possible to issue it at a lower price than formerly. The work closes with a suggestive paragraph on death, which every doctor, whatever his age, should be philosopher enough to appreciate. "As the prime of life is past, signs of old age begin to appear, the eyes become feeble, the hair becomes grey, the cartilages calcify, the muscles become weaker, digestion gets feebler, and metabolism in every way more and more imperfect. If this continues life is ultimately terminated by natural death, in which the functions get weaker and weaker and finally cease. Death from old age is, however, comparatively rare; the common cause of death is accident, in which term we include disease. In the activity of youth many a disease is vanquished, but as the powers of resistance diminish with increasing years, some ailment, usually upsetting more particularly some important organ, will ultimately find the body unable to repel the attack. 'That ends this strange, eventful history.'"

Medical practitioners generally, and certainly all medical officers of health, tuberculosis officers, and superintendents of sanatoria, must in these days pay special attention to the consideration of industrial conditions in their relation to disease. Dr. Prosser White's monumental work on Occupational Affections of the Skin is one which we would specially commend to all students of the pathology of trade processes.[1] A new edition of this fine monograph has just been issued. It is a magnificent exposition of the ætiology of occupational skin disorders, and throughout is manifest the author's originality and independence of

[1] "The Dermatergoses or Occupational Affections of the Skin, giving Descriptions of the Trade Processes, the Responsible Agents and their Actions." By R. Prosser White, M.D., M.B., C.M., M.R.C.S., President of the Certifying Factory Surgeons' Association, etc. Third edition. Pp. xi + 734, with 52 plates, including 58 figs. London: H. K. Lewis and Co., Ltd. 1928. Price 35s.

outlook. The work is presented in a dozen chapters: Circumspection; Conspectus; Physical Agents; Acids, Alkalis, and Some Metallic Salts; the Coniocytites, or Dermatoconioses from Mineral, Chemical, and Vegetable Dusts; the Hydrocarbon Series; Occupational Skin Hazards of Mixed Origin; Skin Diseases in Trade and Crafts; Synthetic Dyes and Dyeing; Dermatitis Venenata; Zoetic Dermapathy; and War Dermatoses. Such a brief enumeration indicates the comprehensive and far-extending range of the author's investigations. Reference is made to some of the tuberculous lesions met with in the skin, such as verruca necrogenica, caused by local inoculation from an open tuberculous focus, particularly from animal or human cadavers, met with in doctors, veterinary surgeons, bacteriologists, dissecting-room and post-mortem attendants, nurses, undertakers, farmers, cattle dealers, flayers, game dealers, and those engaged in "butchering" and "smoke-drying" trades. Mention is made of subjects whose hands have been tuberculously infected by washing handkerchiefs used by phthisical patients. It is pointed out that similar tuberculous skin lesions have been noted in straw-hat workers. In all these cases "the trouble begins at the site of an abrasion, as a central depression surrounded by a ring of dark-red warty nodules. An inflammatory pustule slowly develops, which gradually becomes bean-sized, flattened, and covered with a horny and warty surface, or by crusts. 'Lupoid' structure is never formed. The fingers and knuckles are favourite sites. The growth should be removed, for without attention the condition spreads. It is a rare thing for it to involve the nearest glands, and still more rarely does it lead to general tuberculosis." Dr. Prosser White has rendered the profession a notable service by bringing his great work on Dermatergoses up to date, and incorporating the material presented in recent brochures issued by the League of Nations Labour Office. The volume is splendidly produced, and the numerous fine illustrations add much to its value as a permanent work of reference. The highest praise must be given to the general index and index of authorities, which extend in small print over 200 pages in two columns to each page.

In this country, and particularly during the cold, damp, dark days of winter, "rheumatic" affections are very prevalent. According to the Ministry of Health they are responsible for something like one-sixth of the total disability of members of the working classes, and entail an annual expenditure in sick benefit allowances of nearly two million pounds. "Rheumatic" manifestations are only too prevalent among patients undergoing sanatorium treatment. As regards the ætiology of the "rheumatic" disease we are still in the dark, and measures for treatment leave much to be desired. Dr. Crowe, who has devoted many years to the study of rheumatism, has summarized his views and conclusions in a highly suggestive monograph which merits unprejudiced consideration.[1] He is a firm believer in the microbic origin of the rheumatic diseases: a staphylococcus in rheumatoid arthritis and a streptococcus in osteo-arthritis, but "in the majority of cases both infections occur together." Dr. Crowe is an enthusiastic advocate of

[1] "The Treatment of Chronic Arthritis and Rheumatism." By H. Warren Crowe, D.M., B.Ch. (Oxon), M.R.C.S., L.R.C.P. Pp. xi+196, with 16 figs. and 2 charts. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1928. Price 8s. 6d.

vaccine therapy for these diseases. In his book he presents evidence of the faith that is in him. The work deals in the eight chapters with problems of classification; questions of causation, diagnosis, and prognosis; difficulties in the management of clinical cases; and results. A special chapter is devoted to a consideration of the author's stock vaccine. Mr. W. G. Macdonald furnishes a practical chapter on Orthopædics. The appendix contains notes on technique for the collection of specimens and a scheme of dosage. Dr. Crowe promises a supplemental volume at an early date. The book is a member of the Oxford Medical Publications, and is produced in the effective and attractive form which we expect from Mr. Humphrey Milford.

Dr. H. Hyslop Thomson's short, lucid, practical little book on the prevention and home treatment of tuberculosis, designed to help patients and their friends, has met with much favour from medical advisers and those for whom it was written. It now appears in a thoroughly revised third edition.[1] Tuberculosis officers, general practitioners, health visitors, and others having to deal with tuberculous cases and their relatives will find this unpretentious, reliable, and practical manual just the kind of counsellor and guide which they can recommend. In the treatment of such a disease as tuberculosis it is essential that there shall be loyal co-operation between doctor and patient, nurse, and those who assist in the care of the sufferer, and Dr. Hyslop Thomson's well-arranged, explicit, and helpful handbook is exactly what is needed to secure this desirable end. The price is such as to bring it practically within the reach of all. The volume is a member of the series of trustworthy Oxford Medical Publications.

"Meteorology," by David Brunt, M.A., B.Sc., is a member of "The World's Manuals," and certainly deserves the consideration of all thoughtful men and women.[2] It is a little book which medical advisers, and especially those connected with sanatoria and like institutions, will find both interesting and serviceable. The author has sought to set out the physical principles underlying the phenomena which collectively constitute "weather" without attempting to provide any rules for forecasting. The book opens with a résumé of the history of modern meteorological developments; then follow chapters on the constitution and physical properties of the atmosphere, standard meteorological observations and their use, and the idea of a general circulation of the atmosphere. Medical readers will be specially interested in the sections on solar radiation and its reception in the atmosphere, and the variation of temperature in the atmosphere and some of its physical effects. There is a good chapter on the weather map. Other subjects dealt with are the theories of the origin of cyclonic depressions, travelling disturbances in the atmosphere, and thunderstorms. Even today there is no subject which interests mankind like

[1] "Tuberculosis: its Prevention and Home Treatment—A Guide for the Use of Patients." By H. Hyslop Thomson, M.D., D.P.H., County Medical Officer of Health, School Medical Officer, and County Tuberculosis Officer for Hertfordshire; formerly Medical Superintendent, Liverpool Sanatorium, and Medical Superintendent, Consumptive Sanatorium of Scotland, Bridge of Weir. Pp. xi+99, with charts and diagrams. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1928. Price 2s. 6d.

[2] "Meteorology," by David Brunt, M.A., B.Sc., Superintendent, Army Meteorological Services, Meteorological Office, Air Ministry, Kingsway, W.C. 2. Pp 112, with 19 illustrations. London: Humphrey Milford, Oxford University Press. 1928. Price 2s. 6d.

the weather, and when aeroplanes become as popular as motor-cars Mr. Brunt's handbook, then probably revised and enlarged, may well serve as one of the manuals for the examination which every flyer will it may be hoped be expected to pass. A word of special praise must be allotted to the excellent photographs.

Sir Thomas Horder and Dr. A. E. Gow have just published what we consider the very best introduction to clinical medicine which has ever been available for British students and young practitioners.[1] The science and art of diagnosis can only be gained by careful observation, and long experience of patients, but much can be accomplished by instruction in sound methods, the use of accurate terms and precision, order, and lucidity in the preparation of records. The man and woman in training for the medical profession will find in the book before us just the guide, directory, and reference work which they require if they are to start on sound lines. The authors have endeavoured to revive their own experiences of the difficulties and outlook of early clinical days, and have succeeded in producing a really masterly exposition, which students only have to know to appreciate. The work is admirably arranged, lucidly expressed, and contains just the essentials in a form for practical application. We would particularly commend to practitioners dealing with chest cases the excellent section dealing with the Respiratory System. The paragraphs on exploratory puncture of the chest are particularly helpful. The notes on cough, sputum, hæmoptysis, instrumental investigations, and X-ray examination are all admirable. The volume is effectively illustrated, and there is a splendid index.

Erythema nodosum is a clinical entity which from its undoubted association with tuberculosis merits the serious study of all who have to deal with tuberculous subjects. Dr. Odery Symes has rendered a valuable service in presenting his views on erythema nodosum based upon notes of 250 cases.[2] He provides a concise summary of all that is known regarding the causation, nature, diagnosis, prognosis, and treatment. A special chapter is devoted to a consideration of the relationship of the disease to tuberculosis. That erythema nodosum does occur in association with tuberculosis is an established clinical fact. The disease has been viewed as a tuberculous bacillæmia, a tuberculo-toxæmia, an anaphylactic or allegene reaction caused by temporary hypersensitiveness to tuberculous toxin, a special form of subcutaneous tuberculide. Dr. Symes's account of his own clinical experience and experiments is of interest. He is of opinion that "erythema nodosum must always be regarded as a danger signal, as a timely warning that tuberculosis may exist or may develop," and he adds, "Whilst it is possible that tuberculosis prepares the soil for erythema nodosum, it seems much more likely that erythema nodosum

[1] "The Essentials of Medical Diagnosis: A Manual for Students and Practitioners," by Sir Thomas Horder, Bart., K.C.V.O., M.D., F.R.C.P., Physician-in-Ordinary to H.R.H. The Prince of Wales, Physician to St. Bartholomew's Hospital; and A. E. Gow, M.D., F.R.C.P., Physician with charge of Out-Patients and Demonstrator of Practical Medicine at St. Bartholomew's Hospital. Pp. xx + 682. With 8 colour and 11 black-and-white plates, and 22 figures in the text with 5 charts. London: Cassell and Co., Ltd. 1928. Price 16s.

[2] "Erythema Nodosum," by J. Odery Symes, M.D., Consulting Physician to the Bristol General Hospital. Pp. 72. Bristol: John Wright and Sons, Ltd. 928. Price 5s.

prepares the soil for tuberculosis; or, if centres of latent disease exist in the bronchial glands or elsewhere, it lights them up to renewed and often fatal activity." Dr. Symes would have the medical adviser inform the subjects of erythema nodosum that they have an increased susceptibility to tuberculosis, and should take desirable precautions. He thinks that "very much may be done by putting these people in touch with tuberculosis dispensaries and school and public health authorities." These are his concluding words: "The connection between erythema nodosum and tuberculosis is very subtile, but none the less certain. If it were more fully appreciated by the medical profession it would result in a great amelioration of suffering and saving of life."

Switzerland at this season of the year is exercising irresistible attraction for many health-seekers and lovers of winter sports. Certainly a mid-winter holiday for doctors and professional men and women, and others engaged in exacting and strenuous work, is now almost a necessity, and nowhere can greater health benefits be gained in a brief period than by engaging in wintertide sports in the playground of Europe. Those who propose to visit Switzerland this season should procure a copy of Mr. McDermott's attractive and informing handbook.[1] It is a practical manual furnishing advice as regards travel, resorts, equipment, entertainments, amenities, photography, and all the "do's" and "don'ts" which novices must remember in their evolution towards effective sportsmanship. Mr. McDermott has elected to serve as counsellor and friend in all the essentials which make for health and happiness, and a successful and enjoyable winter holiday in the land of snow and ice, and he has proved himself a most effective and desirable guide. Everyone going to Switzerland this winter should carry Mr. McDermott's handbook in his pocket.

Messrs. John Wright and Sons of Bristol, the well-known publishers of "The Medical Annual," have rendered medical practitioners a valuable service by the issue of their fine index series of volumes, dealing respectively with differential diagnosis, treatment, and prognosis —and now has been added a monumental reference work on symptomatology.[2] Dr. H. Letheby Tidy, of St. Thomas's Hospital, as General Editor, has succeeded in associating with himself a representative body of experts in medicine, surgery, gynæcology, and the various specialities. These include Dr. J. B. Christopherson, Dr. C. F. Coombs, Dr. H. Devine, Mr. P. G. Doyne, Dr. A. H. Gosse, Col. L. W. Harrison, Dr. B. Hart, Prof. J. Hay, Mr. G. S. Hett, Dr. E. Holland, Mr. W. G. Howarth, Dr. Robert Hutchison, Mr. B. C. Maybury, Prof. G. R. Murray, Mr. C. M. Page, Dr. F. J. Poynton, Sir James Purves-Stewart, Dr. G. Riddock, Dr. C. Riviere, Dr. J. D. Rolleston, Dr. H. C. Semon, Mr. H. S. Souttar, Mr. K. M. Walker, Sir William Willcox, and Mr. A. J. M. Wright. The work is in every way admirable, and is one which for the busy practitioner will be indispensable. It is just the authoritative reference volume which medical superintendents in sana-

[1] "How to be Happy in Switzerland (Winter Sports)," by F. McDermott. Pp. 224, with frontispiece, illustrated chapter headings, and map. London: J. W. Arrowsmith (London), Ltd., 6, Upper Bedford Place, Russell Square, W.C. 1. 1928. Price 3s. 6d.

[2] "An Index of Symptomatology," by Various Writers. Edited by H. Letheby Tidy, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), Assistant Physician, St. Thomas's Hospital, Consulting Physician, Royal Northern Hospital. Pp. xii + 710, with 130 illustrations, some in colour. Bristol: John Wright and Sons, Ltd. 1928. Price 42s.

toria and other institutions will find helpful. The articles dealing with tuberculosis are excellent. Dr. Clive Riviere is responsible for the section dealing with pulmonary tuberculosis in both its acute and chronic forms and hilus tuberculosis. Radiograms are presented. Sir James Purves-Stewart describes tuberculous meningitis. Dr. Henry C. Semon deals with tuberculides. The editor has himself undertaken the section on tuberculous peritonitis. Mr. C. Max Page writes on bone tuberculosis; Mr. Kenneth Walker on tuberculosis of kidney, ureter, bladder, and prostate; and Mr. H. S. Souttar on tuberculosis of testis. There are also references to tuberculous lesions in other parts of the body. The volume is clearly printed on good paper, and is generously illustrated with reproductions of photographs and charts, and there is a thoroughly practical index. This all too brief notice will, we trust, be sufficient to establish our contention that no practitioner's armamentarium is complete without the "Index of Symptomatology."

Mr. S. C. Chatterji, of the Government Training College, Ajmer, has written a powerful plea for the establishment of open-air schools and sanatoria for tuberculous children in India.[1] General principles are succinctly set forth, together with practical details for the conduct of schools and the construction and management of sanatoria for young subjects. The work has been prepared for extensive distribution throughout India, and should do much to arouse public opinion to more active anti-tuberculosis measures, and to the need for establishments for dealing adequately with tuberculous children.

"The Tit-Bits Year Book" for 1929 is a reference book for everybody.[2] It is a remarkable compilation of data, information, and advice, condensed and presented in serviceable form. Such an "Enquire Within" should always be kept at hand. There is much in this volume which will be of special interest to doctors, nurses, and patients, as well as to all classes of citizens desiring to be well informed. Mr. Elgie contributes a valuable summary of "Fifty Years of Memorable Weather Happenings"; Mr. Brett writes on "The Year in the Garden"; and there are sections on "Good Health" and "Medical Discoveries of 1928," with also an excellent list of summer and winter menus.

[1] "A Plea for Open-Air Schools in India." By S. C. Chatterji, B.Sc. (All.), M.Ed. (Leeds). Pp. x + 57. Bombay: D. B. Taraporevata, Sons and Co., "Kitab Mahal," 190, Hornby Road, Fort. 1928. Price Rs. 1.8.

[2] "The 1929 Tit-Bits Year Book." Edited by Leonard Crocombe, Editor of *Tit-Bits*, and C. H. David, Assistant Editor. Pp. 174. London: George Newnes, Ltd., Southampton Street, Strand, W.C. 3. Price 1s.

PREPARATIONS AND APPLIANCES.

THE PREVENTION OF MIXED INFECTIONS IN PULMONARY TUBERCULOSIS.

THE frequency with which pulmonary tuberculosis is accompanied by a mixed bacterial infection of the respiratory tract suggests the desirability of instituting measures to prevent the onset of secondary complications. Particularly would this seem to be desirable for recovered cases on account of the recognized danger that an active catarrhal infection may light up a quiescent tuberculous lesion. Attempts to prevent the development of a common cold, bronchitis, and influenza in the non-tuberculous subject by the use of bacterial vaccines are being practised to an ever-increasing extent and with a high percentage of satisfactory results. It is generally recognized that the bacterial picture of the common catarrhal conditions of the respiratory tract presents fairly constant features, the following micro-organisms being almost invariably present: Pneumococcus, streptococcus, Pfeiffer's bacillus, M. catarrhalis, B. pneumoniæ of Friedländer, and possibly also the staphylococcus. The stock vaccines in common use are based on such a bacterial flora, and contain the various organisms in suitable proportions. We are not aware that the possibilities of such prophylactic measures have hitherto received as much attention in the case of tuberculous patients as purely theoretical considerations appear to justify. It would be of more than academic interest if some organized investigation could be carried out among the patients and members of the staff of a number of sanatoria and other institutions dealing with tuberculous subjects with a view to collecting statistical data regarding the value, or otherwise, of a carefully regulated course of inoculations of a suitable bacterial vaccine for warding off these important secondary complications. The successful application of vaccines, whether it be for prophylaxis or treatment, in connection with diseases of the respiratory tract, depends very largely upon the correct regulation of the dosage to suit individual requirements. On broad general lines it may be said that individuals of not more than average susceptibility to such infections will tolerate fairly large doses of bacterial vaccines, whereas those individuals of high susceptibility (and in this group must be included tuberculous subjects) require much weaker vaccines and very gradual increments of doses. A suitable vaccine, designated "Cold Vaccine, Mixed," is prepared in the laboratory of the therapeutic inoculation department of St. Mary's Hospital, London, W. 1.[1]

[1] Full particulars regarding the various anti-catarrhal and other vaccines suitable for administration to tuberculous and tuberculously disposed subjects, and to medical advisers, nurses, and others liable to infectious "colds" and in attendance on tuberculous patients, may be obtained on application to Parke, Davis and Co., 50, Beak Street, Regent Street, London, W. 1.

ELECTRIC HEATING.

Electricity is revolutionizing the life of man. Certainly in the home, the hospital, the sanatorium, and the school the coming of electric power is adding to efficiency, comfort, and service. Particularly is it proving of value in medicine, surgery, and hygiene in all their branches. In the one important matter of heating, electric appliances are bringing increased comfort to both the sick and the sound. We desire to direct attention to a novelty which will be appreciated in sanatoria and hospitals, nursing homes and private dwellings, where tuberculous and other delicate persons who are depressed by cold have to be dealt with. The MILLIWATT ELECTRIC HEATING CUSHION meets a very real need.[1] It consists of a flexible pad which is provided with an internal heating unit to which current is supplied from the mains. Flexibility and safety are assured by winding the fine heating wire spirally on a core of asbestos, and covering it by a plaited asbestos sheath. The heating unit is completed by sewing the cord thus prepared in convolutions between two sheets of canvas. Overheating is prevented by including in the electric circuit a pair of thermo cut-outs, which interrupt the flow of current with certainty at the temperature to which they are adjusted. The heating unit is enclosed in covers of canvas, water-proofed material, and flannel, and a washable white cotton slip is buttoned over the whole appliance. The cushion can be adjusted to three heats by means of a neat and novel rotary switch, which has indicators embossed on it so that by the sense of touch and in the dark it may be set to the required temperature. The consumption of electricity is very small: for the greatest heating, about 80 watts, and for the lowest heating (which is usually sufficient for ordinary purposes), only 20 watts—that is to say, about the same as that of a small electric lamp. When in operation, the supply of current is continuously controlled by the automatic cut-outs, so that the cushion reaches and remains permanently at a serviceable and comfort-giving temperature. As everyone knows, the old-fashioned hot-water bottle needs time for preparation by filling and repeated attention for refilling. The Milliwatt Cushion is always ready for instant use, and it requires no further attention when in protracted and continuous service. It should also be noted that the flexibility of the cushion enables it to be adjusted to the shape of the part to which it is applied, and the user may safely lie on it with his whole weight. This cushion will be of much service in many disorders, particularly those associated with pain such as pleurisy, neuritis, arthritis, and even the aches of fatigue in the normal worker will be assuaged. This Electric Cushion is made in two sizes, the larger, 13 by 15 inches (price 32s. 6d. to 35s. according to voltage), and the smaller, 10 by 14 inches (27s. 6d.), and can be obtained for any voltage.

THE MILLIWATT ELECTRIC HEATING CUSHION.

[1] Particulars regarding the Milliwatt Electric Heating Cushion can be obtained on application to Electric Cushions, Ltd., 200, High Holborn, W.C. 1.

HYGIENIC APPLIANCES AND THERAPEUTIC PREPARATIONS.

Man in the course of his evolution has assumed the erect posture and become a sitting animal. Under modern conditions of life, most of the daytime of many men and women is spent in a sitting attitude Through the ages much thought and skill has been devoted to the production of artistic and useful chairs, but up to recent years but little attention has been given to a scientific study of the hygienic requirements which should be met in a properly designed and effectively produced chair. The Tan-Sad Chair Co. Ltd., have now overcome all difficulties, and can meet all needs in regard to the provision of a really reliable and hygienically correct chair.[1] There are a number of models available. By the use of the TAN-SAD DOMORE CHAIRS, stress and strain in work is lightened, fatigue lessened, and comfort insured. The chairs are constructed in accordance with anatomical and physiological requirements, weight being properly distributed, support given where desirable, and unnecessary pressure obviated. The attention of medical advisers should be directed to these chairs. For use in the consulting room, laboratory, workshop, and elsewhere, the Domore Chairs only require to be used to be appreciated. We would point out that some of the models are admirable for employment in hospitals, and are to be strongly advised for use in tuberculosis dispensaries and examining rooms of hospitals, for they allow of full exposure of the chest, back and front, and do not impede breathing in any way.

THE RICHMOND HEAD REST is a novelty which will be found serviceable in the nursing of delicate and invalid cases, as well as for adding to the comfort of luxury lovers.[2] The main features of this carefully-planned, anatomically-designed, and well-constructed head rest are shown in the accompanying figure. Tired folk, like overworked doctors and weary nurses, and all who need recuperation by rest and sleep, will find this new support helpful. In the nursing of certain cases of advanced disease the head rest has proved valuable. Travellers by train or motor, and patients undergoing treatment in sanatoria and elsewhere, will welcome the gift of a Richmond Head Rest.

THE RICHMOND HEAD REST.

Patients undergoing open-air treatment, travellers seeking health abroad, winter sportsmen, and motorists during winter days, require adequate protection for the feet if health and comfort are to be maintained and disorders prevented. The GLASTONBURY OVERSHOES are admirable for winter wear.[3] They are invaluable when motoring and

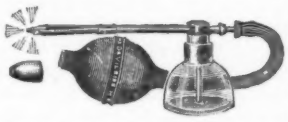
[1] Particulars and illustrations of the various models of the Domore Chairs can be obtained on application to the Tan-Sad Chair Co. Ltd., Windsor House, 87, Kingsway, W.C. 2.

[2] The Richmond Head Rest can be obtained from Feans Ltd., 71, High Holborn, W.C. 1. Prices: velvet, 16s.; silk, 31s.

[3] An illustrated catalogue of the Glastonbury footwear may be obtained on application to the manufacturers, Clark, Son, and Morland Ltd., Glastonbury, Somerset.

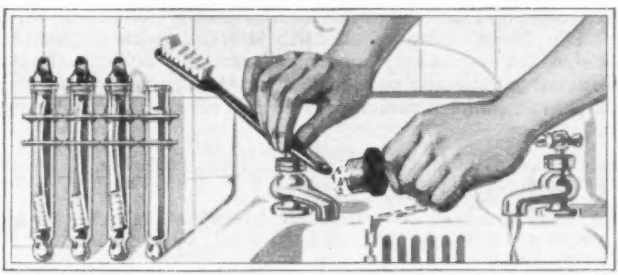
for service at Swiss and other winter sports stations. We would particularly commend then to the attention of doctors and nurses, as well as to consumptive and other patients, and particularly to all such as suffer from cold feet and are liable to chilblains. The Glastonbury Overshoes are available in all sizes and a variety of forms. They are constructed of wooled sheepskin, and have crêpe rubber or golosh soles, and each is fitted with a lightning fastener or laces, as may be desired.

THE DE VILBISS SPRAYS are justly popular in this country and America.[1] No. 15, an illustration of which is appended, is a thoroughly reliable appliance for practically all purposes. It is very effective for spraying naso-pharyngeal passages with oils and aqueous solutions. By simply adjusting the tip spraying can be carried out in any direction. This form of atomizer is simple, effective, inexpensive, does not easily get out of order, and can be readily cleaned, and being of metal can be sterilized by boiling or by passing the spray point through a suitable flame. By means of the adjustable lip the spray can be sent in any direction.



THE DE VILBISS SPRAY NO. 15.

A toothbrush is now considered a hygienic necessity, but it is to be feared that in many cases it does more harm than good. The "KEMDENT" DENTILIZER has been designed to provide a sanitary



"KEMDENT" STERILE TOOTHBRUSHES ATTACHED TO WALL BRACKET AND IN USE.

receptacle for the personal toothbrush.[2] At the lower part of the glass tube is a chamber in which is a germicide giving off a disinfecting vapour. By use of this novel protector and sterilizer the bristles of the brush are kept clean and firm, and the toothbrush is always ready for use. The age and effectiveness of a toothbrush are considerably prolonged by the employment of a Dentilizer.

TAXOL is a comparatively new laxative which we have found of

[1] An illustrated catalogue of the De Vilbiss Sprays can be obtained on application to De Vilbiss Co., Ltd., West Drayton, Middlesex.

[2] The "Kemdent" Dentilizer, supplied by the Lavodent Company, Ltd., Kemdent Works, Denmark Road, West Ealing, W. 13, price 2s. 6d.; with wall bracket 6d. extra.

much service.[1] It is a particularly desirable preparation for tuberculous and other delicate subjects troubled with persistent constipation. Its action is not accompanied by the discomfort which is associated with so many purgatives. Taxol is a composite preparation said to be composed of the extracts of intestinal glands, biliary extract, agar agar, and selected lactic ferments. It is supplied in tablet form (fifty tablets, price 3s.) and provides one of the most satisfactory forms of laxative with which we are acquainted.

DIMOL, which was noticed in our issue for July last, is finding increasing favour as a safe and effective antiseptic and germicide.[2] As a non-toxic intestinal bactericide it is being administered as Dimol Pulverettes A (white) and B (yellow). Now a new form, designated T and coloured pink, is available, according to the following formula: Dimethylomethoxyphenol 1 gr., acid arsen $\frac{1}{180}$ gr., and ext. nuc. vom. $\frac{1}{10}$ gr. Dimol is also now supplied as a mouth wash and promises to be of much service in various general infections and in conditions associated with oral sepsis. The Rideal-Walker coefficient is guaranteed as equal to 20 per cent. pure carbolic acid.

Smoking is certainly a great comfort to many people both strong and sick. It is in many instances a soothing and encouraging habit for not a few consumptive and other tuberculous patients and sufferers from chronic ailments. But as all doctors know the use of tobacco requires to be regulated if dangerous addiction is to be avoided, and especially when cigarettes are indulged in, it is very necessary that only those of reliable quality should be indulged. This is very important in all chest cases, and particularly those who are the subject of tuberculosis. The famous firm of Abdulla and Co. make a speciality of cigarettes which are not only appreciated generally by medical advisers but are suitable for many patients.[3] The Abdulla cigarettes are available in artistic cabinets, which provide charming gifts for doctors and others.

[1] Taxol is manufactured at the Laboratoires Rénnis Lobica, 11, Rue Torricelli, Paris, and specimens and particulars can be obtained on application to Continental Laboratories, Ltd., 17, Lower Belgrade Street, S.W.

[2] Particulars regarding the new Dimol preparation can be obtained on application to the Dimol Laboratories, Ltd., 40, Ludgate Hill, E.C. 4.

[3] Messrs. Abdulla and Co. Ltd., 173, New Bond Street, W. 1, will be pleased to send medical advisers and readers of this *Journal* particulars regarding their specialities suitable for patients.

THE OUTLOOK.

TUBERCULOSIS AND THE PUBLIC HEALTH.

SIR GEORGE NEWMAN'S latest Annual Report is one of exceptional interest to readers of this JOURNAL, and should be seriously studied by all medical officers of health, tuberculosis officers, medical superintendents of sanatoria, and all medical advisers and citizens responsible in any way for the conduct of anti-tuberculosis measures and the care of tuberculous subjects.[1] The volume opens with a general survey "on the state of the public health in England," in which general principles are succinctly indicated, and then follow chapters on general epidemiology, tuberculosis, venereal diseases, cancer, maternity and child welfare, the Insurance Medical Service, relation of food to health and disease, medical intelligence and environmental hygiene, acute rheumatism, light therapy, international health, health education, and closes with a comprehensive summary. Prominence is given to the tuberculosis problem. The population of Great Britain in 1927 was 48,393,000, including the population of England and Wales, 39,290,000 (an increase of about 200,000 on 1926). The following are the numbers of new cases of tuberculosis notified in 1927: in England and Wales—pulmonary 58,109, non-pulmonary 19,781, total of all forms 77,890. The number of deaths registered from all forms of tuberculosis in England and Wales for 1927 was 38,173 as compared with 37,525 in 1926—an increase of 958 total pulmonary deaths. This gives a death-rate of 791 per million as compared with 771 in 1926 and 833 in 1925. With regard to non-pulmonary tuberculosis, the decline manifested in recent years still continues. The death-rate from non-pulmonary tuberculosis was 181 per million as compared with 190 in 1926. In England on April 1, 1928, tuberculosis work was being carried out in 440 dispensaries, and in addition 95 other premises were approved for special forms of treatment, including orthopædic, out-patient care of tuberculous cripples after returning from residential treatment. The tuberculosis officers numbered 378. The number of residential institutions, hospitals, and sanatoria numbered 494—215 provided by local authorities and 279 by voluntary bodies. They provided 22,618 beds—14,599 by local authorities and 8,019 in voluntary centres. Elaborate efforts have been made to gauge the results of the sanatorium system as practised in England, and data are now available, based on returns supplied in answer to various instructional circulars and the much-criticized Memorandum 37 T. It appears that notification returns are very incomplete. In some instances only about 70 per cent. are notified. It is startling to find how inadequately notification is being carried out in some parts of the country. The percentage of tuberculosis deaths in which notification had not been received during life, as indicated in certain reports for 1926, is in some instances extraordinarily high. These certainly ought to be made conspicuous. We quote the whole of the paragraph:

[1] "On the State of the Public Health: Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1927." Pp. 271. London: H.M. Stationery Office, Adastral House, Kingsway House, Kingsway, W.C. 2. 1928. Price 2s. 6d.

"*County Boroughs.*—West Ham 12·8 per cent., Birkenhead 14·2 per cent., Liverpool 16·6 per cent., Blackburn 18 per cent., Stockport 18·5 per cent., Bradford 20 per cent., Carlisle 22·2 per cent. *Urban Districts.*—Milton and Sittingbourne 18 per cent., Batley 23·5 per cent., Chesterfield 25 per cent., Cambridge 32 per cent., Doncaster 35 per cent., Wombwell 38 per cent., Surbiton 41 per cent. *Rural Districts.*—Tadcaster 37·8 per cent., Chesterfield 38 per cent., Thorne 56 per cent., From the Report of the County Medical Office of Derbyshire it would appear that over the whole administrative county 25·6 per cent. of the tuberculosis deaths were not notified during life. The high percentages in some of these instances are, of course, exceptional and must not be taken as typical of the whole country, but it is profoundly unsatisfactory that in some areas medical practitioners should have been so neglectful of their obligations, and medical officers of health so inactive in bringing negligent practitioners to account." These are grievous sins of omission. Cannot the Ministry of Health take steps to improve the situation? After all, notification is an essential and initial step in any effective national tuberculosis campaign. The Report indicates that some tuberculosis officers keep patients hanging on in attendance at the dispensary without ever coming to a definite diagnosis. Moreover, in some areas only about 50 per cent. of new cases and contacts have reports of sputum examinations. This country, it appears, is far behind the United States and some other countries in the use of X-rays in diagnosis. It is admitted that many cases, presumably of the class in which complete arrest is possible, have been retained in residential institutions for quite inadequate periods. For the country as a whole only 22·5 per cent. of these cases stayed over six months. Sir George Newman rightly insists that "the successful treatment of tuberculosis at a sanatorium depends in the first place upon getting the case early, and in the second place upon keeping it long enough." We are glad to see that the opinion of an experienced sanatorium superintendent is quoted to the effect that "it is not the buildings of a sanatorium that matter *but the man in charge of them.*" And many will agree with the following note that: "It is difficult to escape the conclusion that the man in charge is not always giving sufficient attention to the method and organization of his sanatorium or sufficient intensive study to each individual case in his charge." There is a suggestive section on the results of sanatorium treatment which provides statistics deserving of serious consideration. There are also valuable notes on after-care and workshops, and other schemes for the employment of tuberculous workers. Those engaged in the treatment of tuberculous patients will find the information given in the section devoted to methods of treatment most helpful. A particularly valuable portion of the Report is devoted to a consideration of mortality in pulmonary tuberculosis, and is accompanied by a series of suggestive diagrams. We would direct special attention to the "Note on Some General Principles in the Treatment of Pulmonary Tuberculosis," prepared by Dr. A. Salusbury MacNalty. This might well be reprinted in pamphlet form, and a copy sent to every medical practitioner in the country. Sir George Newman, in his concluding chapter, summarizes the position of the sanatorium system of treatment as follows: "This is, beyond question, the best known method of dealing with this disease. It isolates the patient and provides for him the fresh air, nourishment and rest, which enables his

body to conquer the infection. But to be effective it is necessary to begin early, to continue long enough, and submit to an intensive discipline of life. When these conditions are fulfilled the percentage of amelioration or cure is extraordinarily high. On the other hand, if the case is late in admission, the period of treatment too short, and the discipline and after-care disregarded, nearly the whole advantage is lost, and the percentage of cures disappointing. The sanatorium *system* may be imperfect and in need of far more skilled application, but the sanatorium *principle*, whether employed at an institution or at home, is the only effective answer we have at present to this disease."

EUROPEAN TOUR OF CANADIAN TUBERCULOSIS MEDICAL OFFICERS.

Through the far-sighted wisdom and generosity of the Sun Life Assurance Company of Canada a party of tuberculosis officers and members of the Canadian Tuberculosis Association, between August 25 and November 4, 1928, have been enabled to study the Tuberculosis Problem on this side of the Atlantic, visiting London and various centres in this country, Paris, Nancy, Rome, Milan, Venice, Leysin, and other places. On October 16 a company of medical men and women specially interested in the study of tuberculosis met their Canadian brethren at a dinner in London, organized by the Joint Tuberculosis Council. The tour had been organized by Dr. J. H. Elliott, the president, and Dr. R. E. Wodehouse, the secretary of the Canadian Tuberculosis Association. The latter has favoured us with the following impression. Dr. Wodehouse's script only reached us shortly before Christmas, so we regret that it has not been possible to submit proofs to him. Dr. Wodehouse's "impression" is as follows: "It is pleasing to review one's ideas pertaining to such a varied experience as the Canadian Tuberculosis Association party enjoyed in Europe this summer. It is difficult to record them in a short space. Probably it would be as well to deal with them under several headings. As regards architecture of institutions, for instance, we were brought in contact with many examples of tuberculosis sanatoria, which, in our opinion, were not adaptable to our climate or conditions, as to type of building, or as to their disposition on the property occupied. Many of the buildings, according to our way of thinking, were dispersed too much and made service—certainly in our climate anyway—very difficult, as well as increased cost of plumbing, including water supply, drainage, and heating. Buildings which could have been erected in Canada satisfactorily were seen among other places at Leasowe, Liverpool—most attractive two-storey buildings with the upper wards set back—the King Edward VII. Sanatorium at Midhurst, the Frimley Sanatorium, associated with the Brompton Hospital, and the Sanatorium at Bligny in France. As to treatment of chest cases, the practices are very similar except that we do not observe the economy carried out on the Continent of only using flat X-ray plates. Nearly all of our Canadian institutions use stereoptic records of the chest, not only at admission, but make pictures to record the progress from time to time. Also, on the whole, our sanatoria retain cases in their institutions, we think, for a longer period, and we are inclined to follow the school here of more complete rest for the time they are in the institutions. As to

orthopædic practice, we were rather surprised to see the freedom of thought and practice in different institutions. We would have expected more uniformity and a tendency to place the seal of approval on some selected procedure of care of these cases, and that this seal of approval would have been accepted by practically all of the institutions. The one thing which causes such a frank discussion to be given to you is the confidence exhibited by your profession in our Canadian doctors, in that they discussed frankly the most intimate procedure in the administration of their institutions and in the conduct of the care of their patients. Our party were unanimous in feeling that they had enjoyed a most remarkable experience and received great stimulation for thought and ideas for application in their own work in Canada, and have had their outlook very materially broadened. Their appreciation of the ideals of the medical profession of Europe has been very much enhanced by this delightful contact. The hospitality which was extended to us on all sides wherever we went will never be forgotten. We are quite conscious of the fact that we received courtesies and opportunities for association quite out of the ordinary, and we only can hope and pray that we will be granted the honour of a similar visit from our confrères overseas, and that they will find both the scientific and social interests in this country as striking as we did in Europe."

NOTES AND RECORDS.

The Asthma Research Council, with the approval of the Ministry of Health, is organizing research work regarding asthma and associated and allied diseases. The Halley Stewart Trust has made a grant of £2,500. The Lord Mayor will preside at a Mansion House Meeting on January 15, at 3 p.m., to inaugurate a national fund to establish asthma research clinics. Particulars can be obtained from the Secre tary, Asthma Research Council, London Clinic, Ranelagh Road, S.W. 1.

"A Handbook of Actinotherapy" was issued by the *British Journal of Actinotherapy* in connection with the recent Second International Conference and Exhibition on Light and Heat in Medicine.[1] Its contents are of more than passing interest. It contains a survey of recent developments in Actinotherapy and "An Introduction to Actinotherapy," by Dr. R. King Brown, together with notes and descriptions of exhibits.

"The Handbook of Medicated Inhalation Therapy," now in its third edition, provides an illustrated account of the Apneu Inhaling Apparatus of Spiess-Dragen and its use in the employment of medicated inhalations for asthma, tuberculosis, and other affections involving the respiratory tract.[2]

Photographers should not omit to secure a copy of the 1929 issue of the ever-popular "Wellcome" Photographic Exposure Calculator,

[1] "Handbook of Actinotherapy." Pp. xxxii + 82, with chart of electro-magnetic waves. London: The Actinic Press, Ltd., 17, Featherstone Buildings, W C. 1. 1928. Price 1s. 3d. post free.

[2] "Medicated Inhalation Therapy Handbook." Third edition. Pp. 50. London: The British Institute of Inhalation Therapy, 30, Grosvenor Street, S.W. 1. Free on application to medical advisers.

Handbook, and Diary issued by Burroughs Wellcome and Co., Snow Hill Buildings, E.C. 1 (price 1s. 6d.). It fully maintains the high standard established by its predecessors, and appears in the customary companionable pocket form, complete in all respects even to the practical pencil. The little volume contains a vast amount of serviceable information in "tabloid" form, and in addition to the diary has pages for memoranda and records. Four editions of this remarkable publication are issued yearly—for the Northern and Southern Hemispheres, Australia and Tropics, and United States of America.

The "Diary of Appointments, 1929, with Address Book," issued by the Dental Manufacturing Co., Ltd. (London: Alston House, Newman Street, W. 1, price 6s. 6d., or interleaved with blotting or ruled paper, 8s.), is a handsome and thoroughly practical Remembrancer. While prepared specially for the use of dentists, it may be employed equally well by medical consultants. Diary spaces are available for engagements, pages are ruled for accounts, and there is an alphabetic index for names and addresses. The binding is good, the paper is of the best, a pencil in case is provided, and there are tables and other data for ready reference. The publishers have produced a record book for 1929, which will be greatly appreciated by many.

The Behring Institute of Marburg-Lahn have published an illustrated catalogue describing the manufacture and employment of their sera, vaccines, and special preparations.

Messrs. Ogilvy and Co., 20, Mortimer Street, W. 1, the well-known firm of optical engineers, have issued a special illustrated catalogue of shop-soiled and second-hand scientific instruments for microscopic, photographic, and other purposes.

The Cripple is the new name of the modernized and expanded quarterly hitherto known as *The Cripples' Journal*, an ambiguous title which has always been unsatisfactory, and which with the present number is No. 18 of Volume V.[1] Mr. Frederick Watson continues his valuable services as editor. An influential advisory council has been formed, of which Sir Robert Jones, Bart., C.B., F.R.C.S., is chairman, who also has written for the new issue an admirable retrospect and forecast. There are numerous signed communications, including articles by Dr. P. C. Varrier-Jones, Mr. A. Rocyn Jones, Mr. Arthur Richards, Dr. R. W. Mackenna, and Admiral Ronald A. Hopwood, C.B. There is also an educational supplement, suggestions for the establishment of local associations for the care of cripples, and various notes and news. All interested in practical measures for the care of cripples should subscribe to this informing and helpful magazine.

The Actinic Practitioner and Electrotherapist is a new, high-class monthly professional journal for medical practitioners and others engaged in the study and administration of actinotherapy, medical radiology, and electrology. The early numbers are full of promise, containing signed articles by recognized experts, practical notes on professional and technical experiences, records of cases, items of news, and other material relating to the new branches of applied physics in medicine. The journal is effectively got up, with two columns to each page, and is generously illustrated. We anticipate a very successful career for

[1] *The Cripple:* A Quarterly Review. Edited by Frederick Watson. Pp. 88. London: John Bale, Sons, and Danielsson, Ltd., 83, Great Titchfield Street, W. 1. Price 2s. each number. Annual subscription, 8s. post free.

this new publication, which is issued at a price so low that it brings it within the reach of all interested in the subject.[1]

The December number of *Sunlight*, the official journal of the Sunlight League, the offices of which are at 29, Gordon Square, W.C. 1 (annual subscription, including issue of the journal, 10s. 6d.), contains a striking address, "From Heliotherapy to Heliohygiene," by Dr. C. W. Saleeby, delivered at the final session, held at Leysin, of the First International Conference on Light. Mrs. C. W. Kimmins provides an illustrated article on "The Heritage Craft Schools, Chailey." Mr. G. Hobden, of the Shaftesbury Society's Russell Cotes School of Recovery at Parkstone, writes on "The Building of Young Citizens."

Women's Employment, issued by the Women's Employment Publishing Co., 54, Russell Square, W.C. 1, on the first and third Fridays of each month (price 3d.), in the number for November 2, 1928, presented a useful survey of "Open-Air Professions for Women."

The next meeting of the Joint Tuberculous Council will be held on January 19 at the Home of the Society of Medical Officers of Health, 1, Montague Street, Russell Square, W.C. Particulars of this and further meetings can be obtained on application to the Hon. Secretaries, Dr. Ernest Ward, Torquay Road, Paignton, Devon, and Dr. James Watt, The King George V. Sanatorium, Godalming, Surrey.

The Annual *Daily Mail* Ideal Home Exhibition is to be held at Olympia, February 26 to March 23. Particulars may be obtained on application to Carmelite House, E.C. 4.

The Royal Institute of Public Health holds its next Annual Congress in Zurich at Whitsuntide, 1929 (May 15–20), under the presidency of Lord Meston of Agra and Dunottar. There will be seven sections, one being devoted to tuberculosis. Arrangements for travel and hotels are in the hands of Sir Henry Lunn, M.D., 5, Endsleigh Gardens. After the Congress facilities will be afforded for visiting some of the health stations and tuberculosis sanatoria of Switzerland. Particulars may be obtained on application to the offices of the R.I.P.H., 37, Russell Square, W.C. 1.

The Tuberculosis Association is arranging for papers and discussions on the following Fridays at 5.30 p.m. and 8 p.m.: January 18, "A Plea for the Study of Meteorological Conditions in Relation to Open-Air Treatment and Tuberculosis," by Dr. Niven Robertson; and "The Education of the Public in the Prevention of Tuberculosis," by Dr. W. Brand. March 15, "The History of the Main Developments of Tuberculosis," by Dr. Arnold Chaplin; and "Sanocrysin," by L. S. T. Burrell. May 24, "Insulin Treatment," by Dr. J. Forrest Smith. It is proposed to hold a provincial meeting, June 27–29. Full particulars may be obtained from the secretary, Dr. G. T. Hebert, St. Thomas's Hospital, London.

[1] *The Actinic Practitioner and Electrotherapist* is published monthly by H. Edgar Smithers, Professional Publications, Ltd., 139, High Holborn, W.C. 1. Price 6d. each number. Annual subscription, 6s. 6d. post free.